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**AIR FORCE MATERIEL COMMAND  
Supplement 1**

**2 JULY 2002**

***Flying Operations***

**GENERAL FLIGHT RULES**

**COMPLIANCE WITH THIS PUBLICATION IS MANDATORY**

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This instruction implements AFPD 11-2, *Aircraft Rules and Procedures*, by prescribing general flight rules that govern the operation of Air Force aircraft flown by Air Force pilots, pilots of other services, foreign pilots, and civilian pilots. It applies to Air Force activities operating aircraft on loan or lease, to the extent stipulated in the loan or lease agreement; Air Force Reserve (AFRC) units; and to Air National Guard (ANG) units. AFI 11-2 Mission Design Series (MDS) Specific, Volume 3 instructions (e.g., AFI 11-2C-5, Volume 3) may contain specific operational guidance unique to individual aircraft and crew positions. MDS Specific, Volume 3 instructions will not be less restrictive than this instruction. Submit suggested improvements to this instruction on AF Form 847 through MAJCOM channels. Address questions concerning this instruction to Headquarters Air Force Flight Standards Agency (AFFSA), 1535 Command Drive, Suite D-309, Andrews Air Force Base, MD 20762-7002. See Attachment 1 for a list of terms and abbreviations. The use of the name or mark of any specific manufacturer, commercial product, commodity, or service in this publication does not imply endorsement by the Air Force.

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**(AFMC)** This document supplements AFI 11-202, Volume 3 and applies to all AFMC flying activities with primary aircrew assigned or attached for flying. This supplement does not apply to the Air National Guard or the US Air Force Reserve units and members except those under AFMC OPCON.

**SUMMARY OF REVISION**

**(AFMC)** This document is substantially revised and must be completely reviewed or as annotated.

**AFI 11-202, Volume 3, 9 February 2001, is supplemented as follows:**

## ***SUMMARY OF REVISIONS***

This change incorporates IC 2001-01 and provides new guidance for flying under Visual Flight Rules (VFR), during night operations, bird hazard advisories and new Engine-out departure procedures. The text of this interim change replaces and adds to the current guidance. This IC also renumbers paragraphs in accordance with current guidance. Changed paragraphs are denoted by a bar “|”. The entire text of IC 2001-01 is at Attachment 2.

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## Chapter 1

### GENERAL INFORMATION

#### 1.1. General .

1.1.1. Pilot in Command Authority. The Pilot in Command (PIC) is responsible for, and is the final authority as to the operation of the aircraft.

1.1.2. This AFI is a common source of directives including:

1.1.2.1. Air Force-specific guidance.

1.1.2.2. Federal Aviation Regulations (FARs).

1.1.2.3. ICAO Standards and Recommended Practices (SARPs).

1.1.3. This AFI provides necessarily broad guidance and cannot address every conceivable circumstance. PICs are expected to use their best judgment to ensure the safe conduct of the flight.

#### 1.2. Compliance.

1.2.1. The PIC will ensure compliance with the following:

1.2.1.1. This AFI and its MAJCOM supplements.

1.2.1.2. MDS-specific instructions and supplements.

1.2.1.2. (AFMC) AFMC produces a three-volume set of Flight test (FT) instructions containing attachments for each weapon system flown in AFMC. These instructions are numbered AFI 11-2FT Volume 1, 2, and 3, and will contain the training, evaluation criteria, and operations procedures, respectively, for each weapon system. AFMC uses these instructions in lieu of AFI 11-2 MDS-specific Volumes for flying operations. In the absence of published guidance, AFMC units will coordinate with HQ AFMC/DOV for approval of locally developed guidelines. If possible, these guidelines should be consistent with similar guidance specified in the appropriate AFI 11-2 MDS-specific Lead MAJCOM Volumes. In addition, aircraft on loan to AFMC undergoing short-term flight test programs will be flown according to the lead MAJCOM guidance if no AFMC guidance exists.

1.2.1.3. The FARs when operating within the United States including the airspace overlying the waters out to 12 miles from the US coast, unless the FAA has excluded military operations.

1.2.1.4. ICAO SARPs in international airspace over the high seas, military mission permitting.

1.2.1.5. The specific rules of each individual nation as published in Flight Information Publications (FLIP) planning documents and the Foreign Clearance Guide (FCG). Theater commanders must ensure that the contents of FLIP accurately indicate the rules of each nation within their area of responsibility that differ from this instruction.

1.2.1.6. ICAO SARPS when operating in a nation whose rules are not published.

1.2.1.7. Procedures and special notices in FLIP, Notices to Airmen (NOTAMs), aircraft technical orders, Air Force directives, MAJCOM directives, and Air Traffic Control (ATC) instructions. (See Attachment 1 for related publications.)

1.2.2. MAJCOM Supplements. The following restrictions apply to MAJCOM supplements and MDS Specific, Volume 3 instructions subordinate to this AFI:

1.2.2.1. MAJCOM supplements and MDS Specific, Volume 3 instructions may not be less restrictive than this instruction.

1.2.2.2. MAJCOM supplements and MDS Specific, Volume 3 instructions must be coordinated with HQ AFFSA prior to publication. Submit supplements for coordination to HQ AFFSA/XO, 1535 Command Drive, Suite D-305, Andrews AFB MD 20762-7002.

1.2.2.3. (Added-AFMC) AFMC flying units may supplement only AFI 11-2FT Vol 3, *AFMC Flight Procedures*, to incorporate additional aircrew procedures. Send unit supplements to HQ AFMC/DOV, 508 W Choctawhatchee Ave, Suite 4, Eglin AFB FL 32542-5713, for review and approval prior to publication. Include AFMC/DOV and AFMC/DOO on the distribution list for approved supplements to AFI 11-2FT Vol 3.

**1.3. Waivers.** HQ AFFSA will provide written waivers to this instruction only when:

**1.3. (AFMC)** HQ AFMC/DOV is waiver authority for this supplement. Route requests through chain of command to flying unit commanders prior to submission to HQ AFMC/DOV. Send waiver requests to HQ AFMC/DOV, 508 W Choctawhatchee Ave, Suite 4, Eglin AFB FL 32542-5713 for review and approval.

1.3.1. Compliance with this instruction is creating a hazard.

1.3.1.1. An essential MAJCOM requirement makes a waiver necessary.

1.3.2. MAJCOM Commander Waiver Authority. MAJCOM commanders may authorize a waiver to this instruction without prior approval from HQ AFFSA, if doing so is “essential to the defense of the United States” because of a military emergency or an urgent military necessity. MAJCOM commanders will notify HQ AFFSA of their intention to do so.

1.3.2.1. Unless otherwise specified in MDS Specific, Volume 3 instructions, MAJCOM/DO is waiver authority for operational procedure requirements in the appropriate MDS Specific, Volume 3. Further delegation of waiver authority is at MAJCOM discretion and will be addressed in the relevant instruction.

1.3.3. Waiver Process. AFFSA will provide only written waivers. Units requiring a waiver to this AFI will follow the procedure listed below:

1.3.3.1. Units will forward their request for a waiver to this instruction through their chain of command to their MAJCOM. The unit must include a detailed package supporting the request.

1.3.3.2. MAJCOMs will review the request. If approved, MAJCOMs will endorse the request and forward it to HQ AFFSA/XO.

1.3.3.3. HQ AFFSA will conduct a review and respond in writing to the MAJCOM.

1.3.3.4. All approvals will include an expiration date.

1.3.4. FAR Exemptions and Authorizations. MAJCOMs will obtain FAA exemptions or authorizations only through HQ AFFSA.

1.3.4.1. MAJCOMs will follow the procedures outlined in paragraph 1.3.3.

1.3.4.2. MAJCOM commanders may, for operations subject to the Federal Aviation Regulations (FARs) only, unilaterally authorize deviation from air traffic rules without a waiver from HQ AFFSA or an exemption from the FAA, if it considers the deviation "essential to the defense of the United States" and there is no time to obtain approval from HQ AFFSA and the FAA. The MAJCOM will notify HQ AFFSA and the FAA of its military intentions prior to deviating from the flight rules. The notice should be given at the earliest time practicable.

1.3.5. An ATC clearance is not authority to deviate from this instruction.

#### **1.4. Deviations:**

1.4.1. A PIC may deviate from any flight rule only when:

1.4.1.1. An inflight emergency requires immediate action.

1.4.1.2. Deviation is required to protect lives.

1.4.1.3. When safety of flight dictates.

1.4.2. Notification. When deviating from an ATC clearance, the PIC will notify air traffic control of the action taken as soon as possible.

1.4.3. Post-Flight Actions. The following post-flight actions shall be taken in the event of a deviation from a flight rule and/or when given traffic priority by ATC in an emergency:

1.4.3.1. The PIC will verbally report the incident to the immediate supervisor and commander within 24 hours of the incident.

1.4.3.2. The PIC shall make a detailed written record.

1.4.3.3. The unit will keep a copy of that record and be prepared to provide that record to the appropriate investigating authority IAW the AFIs listed in paragraph **1.4.4**. The record will be kept for 1 year from the date of the incident.

1.4.4. Violations. A violation may result when an Air Force aircraft deviates from flight rules. FAA air traffic control facility deviation reports involving an Air Force aircraft are processed IAW AFI 13-201, US Air Force Airspace Management. Air Force air traffic control facility deviation reports involving Air Force aircraft, are processed IAW AFI 91-202, *Hazardous Air Traffic Report (HATR) Program*. Violations that occur in the airspace of foreign nations are handled IAW the procedures of that nation.

1.4.4.1. The names of the crew will not be released to non-USAF agencies without the permission of the Air Force Representative to the FAA (AFREP) coordinating the investigation.

**1.5. Dimensional Units.** Except for visibility distances (statute miles (SM)) or when otherwise indicated, all distances referenced in this instruction are in nautical miles (NM).

**1.6. Improvement Recommendations.** Use AF Form 847, **Recommendation for Change of Publication (Flight Publications)**, to recommend changes IAW AFI 11-215, Flight Manuals Procedures.

**1.6. (AFMC)** Send AF Forms 847 to HQ AFMC/DOV for coordination.



**1.7. Disposition of Records.** Dispose of records accumulated under this instruction IAW AFMAN 37-139, *Records Disposition Schedule*.

## Chapter 2

### PREFLIGHT REQUIREMENTS

#### 2.1. Preflight Planning.

2.1.1. The PIC will ensure that aircrew members know the appropriate procedures and have applicable information available to them for the intended operation. These shall include, but are not limited to:

2.1.1.1. Appropriate sections of the aircraft technical order (T.O)

2.1.1.2. NOTAMs.

2.1.1.3. FLIP.

2.1.1.4. Alternatives available if the flight cannot be completed as planned.

2.1.1.5. Departure, en route, destination, and alternate weather observations and forecasts.

2.1.1.6. Fuel requirements.

2.1.1.7. Minimum safe altitudes for the planned route and terminal area.

2.1.1.8. Takeoff and landing limitations.

2.1.1.9. The Airfield Suitability and Restrictions Report (ASSR).

2.1.1.10. AFI 11-2MDS-Specific, Volume 3 Operations Procedures.

2.1.1.11. (Added) Applicable bird advisories and hazard information, available through internet sources, ATIS, or as disseminated locally.

2.1.2. The Airfield Suitability and Restrictions Report (ASSR). Each MAJCOM will:

2.1.2.1. Establish specific policy on the applicability by MDS and how aircrews will use the ASSR.

2.1.2.1.1. (Added-AFMC) Flights to DoD and joint-use airfields within the CONUS. For flights originating and terminating at DoD or joint-use installations within the CONUS, an ASRR review is not required.

2.1.2.1.2. (Added-AFMC) Flights to non-DoD/joint use airfields (including all overseas airfields). For flights originating or terminating at civil airfields (other than joint-use), consult both the ASRR and Global Decision Support System (GDSS) databases for additional flight planning information, airfield suitability, obstruction data, and restrictions. General ASRR restrictions (example: day only, VMC only, etc.) are applicable to all AFMC operations. Aircraft-specific restrictions apply to AFMC users of like aircraft. Where advisements are specified, contact HQ AFMC/DOV.

2.1.2.1.3. (Added-AFMC) Waivers to ASRR Restrictions. ASRR waiver authority is AFMC/DOV.

2.1.2.2. Ensure the ASSR is available to aircrews, mission planners, and other personnel as required.

2.1.2.2. (AFMC) Units will ensure the ASRR is available to aircrews, mission planners, and other personnel as required.

2.1.2.3. Establish procedures to ensure personnel are properly trained on how to access and use the ASRR.

2.1.2.3. (AFMC) Units will establish procedures to ensure personnel are properly trained on how to access and use the ASRR.

2.1.3. Publications. The PIC will ensure that the current copies of the appropriate FLIP en route supplement, en route charts, Flight Information Handbook, and appropriate arrival, approach and departure procedures are aboard the aircraft. If an electronic navigation system database is used, the PIC will ensure it is current.

2.1.3.1. (Added-AFMC) Carry sufficient maps, charts, and flight information publications (FLIP) to navigate for both the planned IFR and VFR phases of flight. For local flights, detailed aircrew aids that contain this information are sufficient.

2.1.3.2. (Added-AFMC) Inflight Manuals/Directives. The PIC will ensure that applicable flight manuals, checklists, and mission related directives (if required) for all mission required crew positions will be carried in flight. The Director of Flight Operations (DFO) will determine required mission directives. For aircraft lacking adequate storage space, only checklists are required for each crew position.

2.1.4. Stopover flights. The PIC will:

2.1.4.1. Ensure the entire flight is planned to its final destination in the greatest detail possible for each leg of the flight.

2.1.4.2. Before departing each intermediate stop, obtain the latest weather and NOTAM information available for the intended route, destination and alternate.

## **2.2. Fuel Requirements.**

2.2.1. General Information. The PIC will ensure sufficient fuel is available on board the aircraft to comply with the requirements of this instruction and safely conduct the flight. Before takeoff or immediately after inflight refueling, the aircraft must have enough usable fuel aboard to complete the flight:

2.2.1.1. To a final landing, either at the destination airport or alternate airport (if one is required), plus the fuel reserve.

2.2.1.2. To or between Air Refueling Control Points (ARCP) and then to land at the destination (or a recovery base, if refueling is not successful), plus the fuel reserve.

2.2.2. Alternate Airport. When an alternate is required, the weather conditions at the original destination govern the preflight fuel computation.

2.2.2.1. Fuel required for an approach and missed approach must be included in the total flight plan fuel, when the visibility-only weather criteria in paragraph 8.3.3.1.2. is used to determine the suitability of the original destination.

2.2.2.2. Fuel required for an approach and missed approach is not required when the ceiling and visibility criteria in paragraph 8.3.3.1.3. is used to determine the suitability of the original destination.

2.2.3. Fuel Reserve. The PIC must ensure the aircraft is carrying enough usable fuel on each flight to increase the total planned flight time between refueling points by 10 percent (up to a maximum of 45 minutes) or 20 minutes, whichever is greater. To compute fuel reserves:

2.2.3. (AFMC) Refer to AFI 11-2FT Vol3 for specific fuel requirements.

2.2.3.1. For reciprocating engine-driven aircraft and helicopters, use fuel consumption rates for normal cruising altitudes.

2.2.3.2. For turbine-powered aircraft, use fuel consumption rates that provide maximum endurance at 10,000 ft.

2.2.3.3. If the MAJCOM authorizes holding (instead of an alternate airport) for a remote or island destination, do not consider the prescribed holding time as part of the total planned flight time for computing fuel reserve.

2.2.3.3. (AFMC) Holding (instead of an alternate airport) is authorized for a remote or island destination when the requirements of para 8.4.3, as supplemented, are met.

2.2.4. Flight Logs. The following are the approved types of flight logs:

2.2.4.1. AF Form 70, Pilot's Flight Plan and Flight Log.

2.2.4.2. MAJCOM approved form.

2.2.4.2. (AFMC) The DFO may permit the use of a unit-developed flight log. Submit unit-developed forms to HQ AFMC/DOV for approval.

2.2.4.3. Navigator's flight log.

2.2.4.4. Computer-generated flight log produced with MAJCOM approved flight planning software designed to support mission planning for specific aircraft.

2.2.4.4. (AFMC) Refer to AFI 11-2FT Vol3 and the MDS specific attachments for approved flight planning software. AFMC crewmembers are responsible for ensuring correct entry of flight planning data.

2.2.4.5. Flight planning computations annotated on a navigation chart.

2.2.5. Minimum Fuel Advisory. When operating in FAA airspace, pilots will declare minimum fuel to the controlling agency when in their judgment the aircraft may land at the intended destination with less than the required fuel reserve.

## 2.3. Weather.

2.3.1. PICs will obtain sufficient weather information to safely conduct their flight and comply with this instruction. When necessary, record the appropriate weather information on a DD Form 175-1, **Flight Weather Briefing**. The following weather sources are authorized:

2.3.1.1. US Military Weather Services.

2.3.1.2. MAJCOM approved weather sources listed in the MAJCOM/MAJCOM MDS specific supplement to this instruction.

2.3.1.2. (AFMC) When military weather service is not available or incomplete, aircrews will obtain weather by any means possible, to include foreign military, civilian Automatic Terminal Information Service, Flight Service Station, DUATS, through fixed base operators, etc.

2.3.2. Alternative Method. If there are no possible means of obtaining weather from the above sources, pilots may fly in Visual Meteorological Conditions (VMC) to a point where contact can be established with an authorized weather source.

## 2.4. Briefings.

2.4.1. The PIC must ensure each crewmember and passenger is briefed on items that affect safety or mission completion. These briefings will include, but need not be limited to:

2.4.1.1. Emergency procedures.

2.4.1.2. Life support systems and equipment information (see paragraph 6.1.2.).

2.4.1.3. Precautions and restrictions.

2.4.1.4. Special procedures and instructions for use during training, formation, or operational missions.

2.4.1.5. Prohibitions listed in paragraph 2.5.

2.4.2. Printed Information Guides. MAJCOMs will supplement verbal briefings with printed information guides for passenger use on all passenger carrying aircraft. MAJCOMs may exempt aircraft from this requirement if the printed guides create a safety hazard.

2.4.2. (AFMC) Passenger briefing guide requirements are listed in AFI 11-2FT Vol 3.

**2.5. Prohibitions.** The following prohibitions apply to each passenger and crewmember aboard an Air Force aircraft:

2.5.1. Electronic Devices. This section provides guidance on the use of electronic devices inflight.

2.5.1. (AFMC) Portable GPS Units (PGU) may be used on AFMC aircraft when the requirements of AFI 11-202v3 paragraph 5.8.3.3 are met in VMC. PGUs that have passed ASC/ENAE certification testing are approved for operation during any phase of flight. Devices, which have not been tested or fail certification testing, are not authorized for use in AFMC aircraft in IMC.

**NOTE:** Standard aircraft electronic equipment undergoes extensive design and testing to ensure post aircraft installation compatibility. Almost all electronic items produce electromagnetic (EM) energy, thus creating potential interference with sensitive antenna-connected aircraft receivers. Transmitting devices produce much higher EM environments; these can potentially interfere with any onboard electronic equipment. For the purposes of this AFI, "portable" devices are battery powered devices not electrically interfaced with existing aircraft equipment.

2.5.1.1. Portable Nontransmitting Devices Authorized Anytime.

2.5.1.1.1. Hearing Aids

2.5.1.1.2. Heart Pacemakers

2.5.1.1.3. Electronic watches, handheld nonprinting calculators, portable tape players that do not have a recording capability (such as Walkmans, etc).

2.5.1.1.4. Electric Shavers

2.5.1.1.5. Equipment certified IAW paragraph 2.5.1.6. below.

2.5.1.2. IMC. The following conditions apply to the use of electronic devices other than cellular phones (see paragraph 2.5.1.4. below) during flight in IMC.

2.5.1.2.1. Portable Transmitting Devices. Portable transmitting devices, such as handheld radios, shall not be operated at any time when in IMC.

2.5.1.2.2. Portable Nontransmitting Devices above 10,000 feet AGL. The PIC may authorize the use of the following portable nontransmitting devices when in IMC and above 10,000 feet AGL:

2.5.1.2.2.1. Audio and video recorders and playback devices.

2.5.1.2.2.2. Computers, peripherals, and electronic entertainment devices.

2.5.1.2.2.3. Radio receivers.

2.5.1.2.3. Portable Nontransmitting Devices below 10,000 feet AGL. Portable nontransmitting devices will not be operated below 10,000 feet AGL when in IMC unless they have been tested IAW 2.5.1.6. below.

2.5.1.3. VMC. The following conditions apply to the use of electronic devices other than cellular phones (see paragraph 2.5.1.4. below) when operating in VMC.

2.5.1.3.1. Portable Transmitting Devices. MAJCOMs may approve the use of portable transmitting devices such as handheld radios during flights in VMC with the following restrictions:

2.5.1.3.1.1. There must be a valid operational need that cannot be met by any other means.

2.5.1.3.1.2. The MAJCOM shall ensure that EM compatibility testing is conducted IAW MIL-STD 464, with particular emphasis on paragraphs 5.1., 5.2., 5.6., 5.6.1. and 5.6.2. of that standard.

2.5.1.3.1.3. MAJCOMs will advise HQ AFFSA/XO of any authorizations provided under this paragraph.

**NOTE:** MAJCOMs should use caution before authorizing the use of transmitting devices in their aircraft. Handheld transmitters can generate EM fields in excess of the susceptibility levels to which many aircraft electronics are qualified. There is a definite risk of interference and it may be difficult to evaluate all configurations the device might be used in due to portability.

2.5.1.3.2. Portable Nontransmitting Devices. In addition to those items already authorized in paragraph 2.5.1.1. above, the PIC may authorize the use of the following nontransmitting devices at anytime during flight in VMC:

2.5.1.3.2.1. Audio and video recorders and playback devices.

2.5.1.3.2.2. Computers, peripherals, and electronic entertainment devices.

2.5.1.3.2.3. Radio receivers.

2.5.1.4. Cellular Phones. The PIC will ensure that cellular phones are turned off and stowed from the time the aircraft leaves its parking spot for departure until clear of the runway after landing.

2.5.1.5. PIC Responsibility. The PIC will prohibit the use of any device that is suspected of creating interference with any system on the aircraft.

2.5.1.6. Testing Requirements. Nontransmitting devices required to be used during any phase of flight not already authorized in paragraph 2.5.1.1. above must be tested. Technical guidance and data evaluation are available from ASC/ENAE, 2530 Loop Road West, Wright Patterson AFB (WPAFB) OH 45433-7101, DSN 785-8928.

2.5.1.6. (AFMC) Forward all requests to use portable transmitting devices to HQ AFMC/DOV for approval. The request will contain a justification for use; information-demonstrating compliance with the Mil Standards as specified in Para. 2.5.1.3.1.2 this instruction, and the duration of the requirement.

2.5.1.7. Medical Equipment. Devices required during any phase of flight must be approved by AFRL/HEPR. Technical guidance, data evaluation, and a list of preapproved medical equipment are available from AFRL/HEPR, 2504 Gillingham Drive, Brooks AFB TX 78235-5104, DSN 240-2937.

2.5.2. Hazardous Cargo. The PIC is responsible for compliance with AFJI 11-204, *Operational Procedures for Aircraft Carrying Hazardous Materials*, when transporting hazardous cargo on Air Force aircraft.

2.5.3. Transport of Drugs. The PIC will not allow the transport of narcotics, marijuana, or other dangerous drugs on the aircraft unless such transport has been approved by a US military, Federal, or State authority.

2.5.4. FOD Hazards. MAJCOMs will provide guidance on the wearing of wigs, hairpieces, ornaments, barrettes, pins, clips, other hair fasteners, or earrings in the aircraft and on the flight line. MAJCOMs must develop procedures to ensure crewmembers and passengers wearing these items do not create a Foreign Object Damage (FOD) hazard.

2.5.4. (AFMC) Crewmembers will not wear pins, wigs, hair pieces, ornaments, barrettes, clips, earrings, and other fasteners made of leather, plastic, or metal while performing crew duties in or around the aircraft. Additionally, these items are prohibited for all occupants of ejection seat-equipped aircraft. Other items will be properly secured to minimize foreign object damage (FOD) risk. PICs will ensure that passengers wearing these items do not create a FOD hazard.

2.5.4.1. (Added-AFMC) Crewmembers will not wear finger rings/scarves while performing crew duties in or around the aircraft.

## **2.6. Equipment Required for Flight.**

2.6.1. Flight Instrumentation. Primary flight instrumentation must provide fulltime display of attitude, altitude, and airspeed information and the capability to recognize, confirm, and recover from unusual attitudes. Information must be positioned and arranged in a manner that enables an effective pilot crosscheck.

2.6.1.1. The following flight instrumentation must always be displayed in USAF cockpits and illuminated during night operations. Standby or emergency instruments do not fulfill this requirement.

2.6.1.1.1. Climb/Dive Angle (or pitch and vertical velocity)

2.6.1.1.2. Bank Angle

2.6.1.1.3. Barometric Altitude

2.6.1.1.4. Indicated or Calibrated Airspeed

2.6.1.1.5. Prominent Horizon Reference

2.6.1.1.6. Complete Fault Indications (Off Flags)

2.6.1.2. Electronic Flight Displays. Many modern instrument displays allow the pilot to optimize cockpit instrumentation for a particular mission by decluttering, removing or relocating presentations. In some cases, a pilot can omit elements necessary for basic attitude awareness and aircraft control. Regardless of the type aircraft, mission, or mission phase, attitude awareness and paragraph 2.6.1. instrumentation are a fulltime Air Force mission requirement.

2.6.1.3. Single Medium Displays. A single medium display is a Head-Up Display (HUD), Head-Down Display (HDD), or Helmet-Mounted Display (HMD) presenting flight instrumentation on a single display such as a HUD combiner, a “glass” multifunction display, or a helmet visor. Some single medium displays, including many HUDs, do not provide sufficient attitude cues to enable a pilot to maintain fulltime attitude awareness or recover from some unusual attitudes. In addition to meeting the instrumentation requirements of paragraph 2.6.1., single medium displays must also receive HQ USAF/XOO endorsement as a Primary Flight Reference (PFR) before they are used as the stand-alone reference for instrument flight.

2.6.1.3.1. Flight Instrumentation Evaluation and Endorsement. HQ USAF/XOO is the final approval authority for determining which single medium displays meet PFR requirements. MAJCOMs forward endorsement requests for single medium displays through the Joint Cockpit Office (AFRL/HEM), WPAFB OH, and HQ AFFSA/XOP to HQ USAF/XOO. HQ AFFSA must also evaluate any change to cockpit instrumentation that provides a portion of or all the elements of paragraph 2.6.1. to ensure proposed designs adequately meet USAF flying requirements for worldwide operations. Cockpit Working Groups will be implemented IAW AFI 63-112.

2.6.1.3.1. (AFMC) Submit endorsement requests for single medium displays to HQ AFMC/DOV for coordination.

2.6.2. Instrument Flight Rules (IFR). For flights that operate under IFR, the aircraft must have a two-way radio communication system and navigation equipment compatible with the facilities used for the airspace where the operations occur.

2.6.3. Instrument Meteorological Conditions (IMC). Flights conducted in IMC also require:

2.6.3.1. Operative pitot heat.

2.6.3.2. Operational anti-icing and/or de-icing equipment designed to cope with the type and severity of known or forecast icing conditions, and ensure safe operation of the aircraft, except for



brief exposures when climbing or descending to an operating altitude above or below the icing condition.

2.6.4. Night Flight. In addition to the requirements of paragraphs 2.6.1., 2.6.2., and 5.17., a pilot must not operate an aircraft at night unless it is equipped with operative cockpit instrument lights. Each crewmember must carry an operable flashlight. (see glossary: Night)

### Chapter 3

## FLIGHT PLANS AND PASSENGER MANIFESTS

### 3.1. Flight Plans.

3.1.1. Flight Plan Requirement. The PIC will file a flight plan for any flight of an Air Force aircraft.

3.1.2. Authorized Flight Plan Forms. The following flight plan forms are authorized:

3.1.2.1. Those listed in FLIP GP, Chapter 4: DD Form 175, **Military Flight Plan**, and DD Form 1801, **DoD International Flight Plan**, are 2 examples.

3.1.2.2. Host nation required form.

3.1.2.3. A MAJCOM-approved form for local area flights that end at either the base of departure or at an installation under the operational control of the base of departure.

3.1.2.3. (AFMC) The AFMC Form 83, **Local Flight Clearance Authorization**, may be used for local area flights that terminate at the base of departure or at an installation under the operational control of the base of departure. For flights with intermediate stops or termination at other than the base of departure, an AFMC Form 82, **Flight Authorization**, will be used and a DD Form 175 or ICAO Form 1801 flight plan will be filed.

3.1.2.4. A MAJCOM-approved form for flights outside the local area that meets the minimum flight plan information required by the controlling agency.

3.1.3. Procedures for Units without a Base Operations. When the written flight plan form is not processed through base operations, the flying unit must have a written agreement with the local chief of airfield management outlining the procedures for handling flight movement messages and identifying the agency responsible for flight following.

3.1.4. Flight Plan Changes. A PIC may make changes to a route or destination not shown on the original flight plan without refile provided:

3.1.4.1. The change does not penetrate an ADIZ.

3.1.4.2. The controlling ATC agency approves the change for an IFR flight.

3.1.4.3. The PIC ensures the facility providing flight following is notified of the change. Failure to ensure a FSS (or its equivalent in an overseas area) is aware of the change may result in erroneous search and rescue service, or an unannounced arrival at the destination base.

3.1.4.4. The change complies with applicable national rules in an overseas area.

**NOTE:** The format for making changes can be found on the inside back cover of the DoD en route supplements.

3.1.5. Nonmilitary Installation Procedures.

3.1.5.1. FSS or ATC Facility Available. Pilots will file a flight plan with a FSS or ATC facility, if available.

3.1.5.2. No FSS or ATC Facility Available.

3.1.5.2.1. When no FSS or ATC facility is available, the pilot will contact the agency responsible for command and control of the mission prior to takeoff and:

3.1.5.2.1.1. Have them file the flight plan for the PIC.

3.1.5.2.1.2. If they are unable to file, provide a detailed description of the intended flight route to ensure flight following.

3.1.5.2.2. Once airborne, pilots will remain clear of ADIZ/Buffer Zones, adhere to Visual Flight Rules, contact a FSS or ATC facility and:

3.1.5.2.2.1. Confirm the flight plan has been filed.

3.1.5.2.2.2. If the command and control agency was unable to file, file a flight plan.

3.1.5.2.2.3. Obtain the appropriate clearance.

3.1.5.3. Destination Notification. The PIC will contact the nearest FSS or equivalent as soon as practicable after takeoff and request the destination be advised of the departure time to ensure both proper flight following and that aircraft do not arrive unannounced at the destination.

3.1.6. Closing the Flight Plan. The PIC will close an activated flight plan through a FSS or ATC facility by any means of communication available. Long distance telephone service may be used (collect if necessary).

### **3.2. Passenger Manifests.** The following procedures apply to passenger manifests.

3.2.1. List passengers on DD Form 2131, **Passenger Manifest**, or MAJCOM-approved form authorized in the MAJCOM/MAJCOM MDS specific supplement to this instruction.

3.2.2. File a copy of the crew list with the flight plan. File a copy of the passenger manifest with the flight plan or with the passenger service facility. If neither can be filed as stated above, leave a copy with a responsible person at the departure location. Prior to departure, notify the agency responsible for mission command and control of the name of the person or agency to whom the documentation has been entrusted.

3.2.3. If there are unscheduled changes in the crew list or passenger manifest, send the changes to the facility that processed the original manifest or flight plan, or leave the changes with a responsible person at the location where the change is made. If the changes aren't made with the original facility, then prior to departure, notify the agency responsible for command and control of the mission of the name of the person or agency where the changes to the manifest are being held.

**3.3. (Added-AFMC) Parachutist Manifests.** All parachutists will be listed on DD Form 2131, **Passenger Manifest**, or MAJCOM-approved form, AFMC Form 56, **Parachutist Jump Schedule**. Parachutists will provide the aircrew with a copy of the manifest or AFMC Form 56, and the aircrew will file this list with the mission paperwork.

## Chapter 4

### FLIGHT AUTHORIZATION, APPROVAL, AND CLEARANCE AUTHORITY

**4.1. Flight Authorization.** Flights in Air Force aircraft will be authorized in accordance with AFI 11-401, *Flight Management*.

4.1.1. Pilot in Command. The Pilot in Command must be current and qualified in the aircraft to be flown or under the supervision of an instructor pilot. The PIC must have a current instrument rating if any of the flight will be conducted under IFR.

**4.2. Approval Authority.**

4.2.1. The individual designated in the Flight Authorization as the PIC is the approval authority for the flight with the following exceptions:

4.2.1.1. Flying unit commanders will approve flights from installations under their operational control by student or other pilots who do not have their own approval authority.

4.2.1.2. Flying unit commanders will approve flights by fixed wing aircraft to or from other than established landing surfaces, such as highways, pastures, etc.

4.2.2. Flight Plan Signature. The PIC will sign the flight plan. The signature (or act of filing by a means that precludes signing, such as by phone, radio, or computer) is evidence of approval and means:

4.2.2.1. The flight was properly ordered and released.

4.2.2.2. Current NOTAMs, weather, and other pertinent flight data was obtained.

4.2.2.3. The flight will be conducted according to governing directives.

4.2.2.4. The flight plan has been reviewed for completeness and accuracy.

4.2.2.5. Foreign clearance briefings have met the minimum requirements of the FCG.

4.2.2.6. The Formation Lead ensured each member of the formation flight was briefed on all pertinent aspects of the planned flight, and the PIC of each aircraft in the formation possesses an instrument rating (Army and Navy Special and Instrument Ratings, and FAA Instrument/ATP Ratings meet this requirement) if any portion of the flight is to be conducted under IFR.

4.2.2.7. The PIC is aware of the responsibility for safety of the aircraft or formation and its occupants.

4.2.2.8. The flight complies with the scheduling and coordination procedures specified for Special Use Airspace in FLIP AP/1A or Military Training Routes in FLIP AP/1B.

4.2.2.9. The flight complies with ADIZ restrictions published in FLIP and NOTAMs.

**4.3. Additional Approval and Requirements.**

4.3.1. (P) Fields. MAJCOMs may prescribe which Air Force aircraft can file to or land at CONUS civil (P) airports.

4.3.1.1. In the absence of MAJCOM guidance, pilots must not file to or land fixed-wing Air Force aircraft (other than C-designated aircraft, such as C-130, C-21, etc.) at CONUS civil (P) airports except:

4.3.1.1.1. In an emergency.

4.3.1.1.2. When necessary in the recovery of active air defense interceptor aircraft.

4.3.1.1.3. When this instruction requires an alternate airport and no suitable military airport is available.

4.3.1.1.4. When the wing commander or higher authority approves the flight and the airport manager grants permission in advance.

4.3.1.1.5. When FLIP classifies the airport of intended landing as a joint-use field (for example, ANG and civil) and airport facilities or ground support equipment can support the aircraft concerned.

4.3.2. Volume Training, Civil Fields. Flying units shall coordinate with the appropriate civil airport authorities (such as tower, approach control, etc.) before conducting volume training at civil airports.

4.3.3. Volume Training, Airways. Flying units that must conduct volume training along or through airways, shall coordinate with the appropriate ATC agency.

4.3.4. Off-Station Training Flights. Commanders will ensure that all off-station training flights meet valid training requirements and will present a positive image of the Air Force.

4.3.5. VFR Flights. Commanders will ensure all VFR flight operations are only conducted out of necessity, as dictated by mission or training requirements.

4.3.6. (Added-AFMC) For flights originating and terminating away from home base, the DFO will establish local aircrew reporting procedures to ensure monitoring of local and cross-country aircraft, crew status, location, and mission status. For flights originating or terminating OCONUS, DFOs will report aircrew and mission status to AFMC/DOO as soon as practical at DSN 257-8456/986-0082.

4.3.7. (Added-AFMC) One-time flights of un-airworthy/crash-damaged aircraft to repair facilities require HQ AFMC/DO approval. Proposed flights with any engine inoperative or primary aircraft system affecting safety of flight completely inoperative, unless required under an approved test plan, require HQ AFMC/DO approval (for example, hydraulic, electrical, fuel, or flight control). Submit requests, including engineering analysis (if appropriate) and proposed flight restrictions to HQ AFMC/DOV for coordination.

#### **4.4. Clearance Authority.**

4.4.1. IFR Flight in Controlled Airspace. The PIC shall ensure that an ATC clearance is obtained before departing on an IFR flight in controlled airspace.

4.4.1.1. Uncontrolled Airspace. The PIC is the clearance authority in uncontrolled airspace.

4.4.2. VFR Flights. When flying VFR, the PIC must adhere to the clearance requirements for the class of airspace in which they intend to operate as published in FLIP.

#### **4.5. Complying with ATC Clearances and Instructions:**

4.5.1. The PIC will ensure compliance with ATC clearances or instructions unless:

4.5.1.1. An amended clearance is obtained.

4.5.1.2. An emergency exists.

4.5.1.3. Deviation is required in response to a Traffic Alert and Collision Avoidance System (TCAS) resolution advisory (RA).

4.5.1.4. Deviation is necessary to ensure safety of flight.

4.5.2. Pilots shall not follow an ATC clearance or instruction meant for another aircraft.

**4.6. Complying with International Procedures.** PICs will ensure compliance with the international procedures in FLIP GP, Area Planning, and the FCG. In addition, the PIC will:

4.6.1. Expand preflight and postflight aircraft checks on all flights with a destination other than the country of departure. These checks should include likely areas aboard the aircraft where drugs/contraband may be concealed and the manifest of all personnel and cargo.

4.6.2. Immediately report any suspected customs deviations to the proper authorities.

**4.7. (Added-AFMC) Aircraft Delivery.** AFMC depot aircrews will accomplish aircraft pickup and delivery to and from depot facilities, to the maximum extent unit mission requirements allow.

## Chapter 5

### GENERAL FLIGHT RULES

#### 5.1. Operational Standards.

5.1.1. Reckless Flying. The PIC is responsible for ensuring that the aircraft is not operated in a careless or reckless manner which could endanger life or property.

5.1.2. Off-Station Training. PICs will ensure the execution of all off-station training activities achieves valid training requirements, presents a positive image of the Air Force, and does not present an image of waste and abuse of government resources.

5.1.3. Unauthorized Flight Demonstrations. Unauthorized or impromptu flight demonstrations, maneuvers, or “fly-bys” are prohibited. AFI 11-209, *Air Force Participation in Aerial Events*, addresses authorized flight demonstrations.

5.1.4. Flying While Under the Influence. A person must not act as a crewmember of an aircraft:

5.1.4.1. While under the influence of alcohol or its after effects. Aircrew shall not consume alcoholic beverages during the 12-hour period prior to takeoff.

5.1.4.2. While under the influence of or using a drug that affects the ability to safely perform assigned duties. Aircrew may not self-medicate except IAW AFI 48-123, *Medical Examinations and Standards*.

5.1.4.3. If physical condition is suspect or known to be detrimental to safety.

5.1.5. Transporting Passengers Under the Influence. The PIC will ensure personnel suspected to be under the influence of intoxicants or narcotics are not allowed to board an Air Force aircraft except:

5.1.5.1. In an emergency.

5.1.5.2. When in patient status under proper care or when exceptional circumstances exist and no compromise of safety is anticipated.

5.1.6. Crew at their Stations. Crewmembers must occupy their assigned duty stations from takeoff to landing, unless absence is normal in the performance of crew duties, or in connection with physiological needs.

5.1.7. (Added-AFMC) Any assigned, attached, or temporary duty aircrew member involved in a Class A or B mishap will be administratively grounded by the DFO immediately following the mishap. Any aircrew member involved in such a mishap will not perform aircrew duties in AFMC assigned aircraft until re-authorized in writing by AFMC/DO. Forward copies of all grounding actions to AFMC/DOV and coordinate all return to flying status actions through AFMC/DOV for AFMC/DO approval. Copies of all relative actions will be maintained in section four of affected individual's training folder.

**5.2. See and Avoid.** Pilots operating in visual meteorological conditions, under IFR or VFR, whether or not under radar control, are responsible to see and avoid other traffic, terrain, and obstacles.

**NOTE:** ATC only provides separation between IFR and participating VFR aircraft operating within controlled airspace. Standard IFR separation is provided to all aircraft operating under IFR in controlled airspace.

**5.3. Proximity of Aircraft.** PICs must not allow their aircraft to be flown so close to another that it creates a collision hazard. Use 500 feet of separation (well clear) as an approximate guide except for:

5.3.1. Authorized formation flights.

5.3.2. Emergency situations requiring assistance from another aircraft.

**NOTE:** If an emergency requires visual checks of an aircraft in distress, the PIC must exercise extreme care to ensure this action does not increase the overall hazard. The capabilities of the distressed aircraft and the intentions of the crews involved must be considered before operating near another aircraft in flight.

5.3.3. MAJCOM-approved maneuvers in which each participant is fully aware of the nature of the maneuver and qualified to conduct it safely (for example, interceptor attack training).

#### **5.4. Formation Flight.**

5.4.1. Nonstandard Formation Flight. Nonstandard formation flights may be conducted under the following conditions:

5.4.1.1. When approved by ATC.

5.4.1.2. Operating within an authorized Altitude Reservation (ALTRV).

5.4.1.3. Operating under the provisions of a Letter of Agreement (LOA).

5.4.1.4. Operating in airspace specifically designed for a special activity.

5.4.1.5. Operating under Visual Flight Rules (VFR).

5.4.2. Transponder Operations during Formation Flight. Unless otherwise specified in Allied Communications Publication 160, US Supplement 1:

5.4.2.1. Only one aircraft (normally the lead) of a standard formation will squawk the assigned code.

5.4.2.1.1. Unless otherwise directed by ATC, all aircraft within a nonstandard formation flight will squawk the ATC-assigned Mode 3A/C beacon code until established within the assigned altitude block and closed to the proper en route interval. Unless otherwise directed by ATC, when aircraft interval exceeds 3 NMs, both the formation leader and the last aircraft will squawk the assigned Mode 3A/C beacon code.

5.4.2.1.2. During refueling, when the receiver formation is within 3 NMs of the tanker aircraft, the receiver formation squawks standby unless the T.O. specifies different distances.

**5.5. Right-of-Way Rules.** Usually, right-of-way is given to the aircraft least able to maneuver, which normally permits that aircraft to maintain course and speed. However, visibility permitting, each pilot must take whatever action is necessary to avoid collision, regardless of who has the right-of-way. When another aircraft has the right-of-way, the yielding aircraft must not pass over, under, abeam, or ahead of the other aircraft until well clear.

5.5.1. Distress. Aircraft in distress have the right-of-way over all other air traffic.



5.5.2. Converging. When converging at approximately the same altitude (except head-on or approximately so), the aircraft to the other's right has the right-of-way. Aircraft of different categories have the right-of-way in the following order of priority:

- 5.5.2.1. Balloons.
- 5.5.2.2. Gliders.
- 5.5.2.3. Aircraft towing or refueling other aircraft.
- 5.5.2.4. Airships.
- 5.5.2.5. Rotary or fixed-wing aircraft.

5.5.3. Approaching Head-On. If aircraft are approaching each other head-on or approximately so, each shall alter course to the right.

5.5.4. Overtaking Aircraft. An overtaken aircraft has the right-of-way. The overtaking aircraft must alter course to the right.

5.5.5. Landing. An aircraft established on final approach has the right-of-way over other aircraft on the ground or in the air, except when two or more aircraft are approaching to land. In this case, the aircraft at the lower altitude has the right-of-way if it does not use this advantage to cut in front of or overtake the other.

## 5.6. Communication in Flight.

5.6.1. Communication with ATC. Establish and maintain two-way radio communications with the proper ATC facility or FSS IAW the procedures appropriate for the class of airspace as outlined in FLIP.

5.6.2. Emergency Frequencies. Monitor emergency frequencies at all times (unless the radio equipment on board does not have this capability).

5.6.3. Communications Failure. Follow the communications failure procedures published in the FIH.

## 5.7. Aircraft Speed.

5.7.1. Supersonic Flight. PICs will not allow their aircraft to operate at or above Mach 1 except as specified in AFI 13-201, *USAF Airspace Management*. Complete AF Form 121, **Sonic Boom Log**, for each supersonic sortie according to AFI 13-201.

5.7.2. In US Sovereign Airspace. PICs will:

- 5.7.2.1. Not allow their aircraft to exceed 250 knots indicated airspeed (KIAS) below 10,000 feet mean sea level (MSL) unless the MAJCOM has approved a higher speed IAW FAR 91.117(a) exemption (see paragraph 5.7.5., FAA Speed Authorization).
- 5.7.2.2. Not allow their aircraft to exceed 200 KIAS at or below 2,500 feet above the surface within 4 NMs of the primary airport of a Class C or Class D airspace area unless authorized or required by ATC, or required to maintain the minimum safe maneuvering airspeed specified in the aircraft T.O.

5.7.2.3. Not allow their aircraft to exceed 200 KIAS in the airspace underlying a Class B airspace area designated for an airport or in a VFR corridor designated through Class B airspace area, unless required to maintain the minimum safe maneuvering airspeed specified in the aircraft T.O.

5.7.3. Outside US Sovereign Airspace. PICs will not allow their aircraft to exceed 250 KIAS below 10,000 feet MSL unless:

5.7.3.1. Mission requirements dictate speeds in excess of 250 KIAS and operations are in international airspace.

5.7.3.2. ICAO or host nation rules permit aircraft speeds over 250 KIAS.

5.7.3.3. Necessary to maintain the minimum safe airspeed as specified in the aircraft T.O.

5.7.3.4. Required by ATC and permitted by host nation rules.

5.7.4. Holding. Conduct holding at airspeeds prescribed in FLIP.

5.7.5. FAA Speed Authorization. The FAA recognizes that certain military operations and training requirements cannot be met under the terms of the Federal Aviation Regulation (FAR) 91.117 Aircraft Speed and has therefore granted a speed authorization. The authorization grants an exception to aircraft having flight characteristics that preclude safe operations at speeds below 250 KIAS by providing that if the minimum safe airspeed for any particular operation is greater than the maximum speed prescribed, the aircraft may be operated at the minimum safe speed.

5.7.5.1. When the Authorization Applies. Air Force pilots may operate their aircraft below 10,000 feet MSL, within US airspace, in excess of 250 KIAS only under the following conditions:

5.7.5.1.1. Within restricted areas.

5.7.5.1.2. Within MOAs.

5.7.5.1.3. When operating within MAJCOM approved large-scale exercises or short-term special missions.

5.7.5.1.4. Within published IFR MTRs.

5.7.5.1.5. Within published VFR MTRs.

5.7.5.1.6. Within defined areas or routes that have been coordinated and concurred on by the proper MAJCOM and FAA regions, but have not yet been published. This provision is intended to accommodate speed requirements on an interim basis until the area/route can be published.

5.7.5.1.7. When aircraft T.O. requires or recommends a higher speed in order to maintain safe maneuverability. If the T.O. specifies a range, the aircraft should be operated at the minimum speed in that range. This provision is primarily to accommodate climbs/descents and terminal area operations.

5.7.5.2. MAJCOM Responsibilities. MAJCOMs will conduct large-scale exercises in permanent or temporary special-use airspace established according to FAA Handbooks 7400.2 and 7610.4. When MAJCOMs approve large-scale exercises or short-term special missions they will ensure information on approved activities is available to the non-participating flying public and coordinate these operations with:

5.7.5.2.1. Affected non -participating military flying units.

5.7.5.2.2. Affected FAA ARTCCs.

5.7.5.2.3. Affected FAA regions through the Air Force representative.

5.7.5.2.4. Other agencies, as appropriate.

## **5.8. Alternate Navigation Procedures.**

5.8.1. Area Navigation (RNAV). MAJCOMs will approve RNAV systems for en route operations that meet the tolerances in FAA Advisory Circulars 90-45A, 20-130A, and 20-138.

5.8.1. (AFMC) RNAV systems installed during aircraft production or fleet-wide (TCTO) modification, conforming to the accuracy tolerances of FAA Advisory Circular 90-45A, 20-130A and 20-138, are approved for use in enroute operations. Installation and use of other RNAV systems requires coordination with the responsible Air Logistics Center (ALC). Engineering and certification authority for testbed aircraft resides with the contractor and/or responsible test organization.

5.8.2. Self-Contained Approaches. MAJCOMs will publish their policy and restrictions on the use of self-contained approaches such as Airborne Radar Approaches, SCNS, or Mission Computer Approaches, in their supplement to this instruction. These approaches will be considered published if they meet the requirements of paragraph 8.3.1.1. of this AFI.

5.8.2. (AFMC) Unit DFOs may authorize the accomplishment of self-contained approaches as part of an approved test plan or FCF profile. Flight conditions will be day VMC unless the approach is TERPS-certified according to para 8.3.1.1.4, this supplement.

5.8.3. Global Positioning System (GPS). PICs will ensure compliance with the guidance presented in this section appropriate to the GPS installation in their aircraft. Air Force GPS systems are divided into three basic categories: mission enhancement systems, systems meeting FAA requirements for IFR use, and portable GPS units (PGUs).

5.8.3.1. Mission Enhancement Systems. Mission enhancement systems will not be used for instrument navigation. These systems include receiver 3As, Miniaturized Airborne GPS Receivers (MAGRs), embedded GPS/INS systems, or any GPS system which does not comply with the minimum standards of TSO C-129A. These systems are intended to enhance mission capability when conducting tactical operations such as weapons delivery and airdrop.

5.8.3.1.1. Exception. MAJCOMs may approve a mission enhancement system for en route instrument navigation if the mission GPS is used to update a self-contained navigation system, such as INS or mission computer, and is checked against other MAJCOM approved source(s) (e.g., TACAN, VOR/DME, navigator/WSO, independent monitoring system)

5.8.3.1.1. (AFMC) Mission enhancement systems, when verified against other NAVAIDs, may be used to update the INS position for enroute instrument navigation.

5.8.3.1.2. Instrument Approaches. Mission enhancement systems will not be used for instrument approaches unless they are part of a navigation system capable of self-contained instrument approaches as outlined in paragraph 5.8.2. above.

5.8.3.2. IFR Approved GPS. MAJCOMs will approve GPS systems for IFR use. These systems must as a minimum meet the requirements and specifications of FAA TSO C-129A.

5.8.3.2. (AFMC) GPS systems installed during aircraft production or fleet-wide (TCTO) modification, conforming to the requirements and specifications of FAA TSO C-129A, C-115, C-145 and C-146, are approved for IFR use in enroute operations. Installation and use of other GPS systems requires coordination with the responsible ALC. Engineering and certification authority for testbed aircraft resides with the contractor and/or responsible test organization.

5.8.3.2.1. Instrument Approaches. Systems that meet the specifications of FAA TSO C-129A may be used for both IFR navigation and/or GPS instrument approaches.

5.8.3.2.1.1. Approaches flown using GPS must be retrieved from a validated navigation database and shall not be manually entered.

5.8.3.2.1.2. GPS approaches will not be flown with an expired database.

5.8.3.3. Portable GPS Units (PGUs). PGUs include commercial handheld GPS receivers, military Precision Lightweight GPS Receivers (PLGRs), and PLGRs coupled with a laptop computer that incorporates moving map displays. They are intended to be used in aircraft as situational awareness tools only. PGUs are authorized for use with the following restrictions:

5.8.3.3.1. PGUs shall not be used for IFR navigation, instrument approaches, or as a primary flight reference.

5.8.3.3.2. PGUs are considered portable electronic devices and therefore are subject to the requirements of paragraph 2.5.1., Electronic Devices.

5.8.3.3.3. MAJCOMs will specifically authorize the use of PGUs in a supplement to paragraph 2.5.1. of this AFI.

5.8.3.3.4. MAJCOMs will approve software used in PGUs that have a moving map display.

5.8.3.3.4. (AFMC) Software developed for use with PGUs containing moving map displays requires HQ AFMC/DOV approval. Submit supporting documentation with the approval request.

5.8.3.3.4.1. (Added-AFMC) Units will develop a training program tailored to the specific PGU that will be used. Document training completion on the applicable AFMC Form 67 and file in section four of the individual's training folder.

5.8.3.3.5. PGUs will not be used as a substitute for any required flight equipment listed in paragraph 2.6., Equipment Required for Flight.

5.8.3.3.6. PGUs must be adequately secured to avoid becoming a projectile hazard.

5.8.3.3.7. MAJCOMs will develop programs to ensure aircrew have received proper training on these systems before permitting their use.

5.8.3.4. GPS "Overlay" Approaches. Air Force aircraft will not fly GPS "Overlay" approaches unless authorized by MAJCOM for training use only. When so authorized, the approaches must be conducted in day, VMC.

5.8.4. Navigation System Databases.

5.8.4.1. Expired Database. If the database has expired, the PIC:

5.8.4.1.1. May continue a mission with an expired database, if the database information required for the flight can be verified with current FLIP.

5.8.4.1.2. Shall get the database updated at the first opportunity.

5.8.4.1.3. Will not fly GPS approaches.

## **5.9. Airport Operations.**

### **5.9.1. Takeoff and Landing.**

5.9.1.1. Clearances. Obtain a clearance from ATC before taxiing, taxiing onto a runway, takeoff, or landing, at an airport with an operating control tower.

5.9.1.2. Taxi Clearance. An ATC taxi clearance to or from the assigned runway that does not include hold instructions authorizes the aircraft to taxi across all other runways and taxiways en route to or from the assigned runway.

5.9.1.2.1. Do not taxi across or onto the assigned runway without further clearance from ATC.

5.9.1.3. Uncontrolled Field Procedures. At uncontrolled fields:

5.9.1.3.1. Use the runway favored by the winds if no other factors make that runway unacceptable.

5.9.1.3.2. Announce your activities on the appropriate frequency. (Refer to the Aeronautical Information Manual (AIM) and AFMAN 11-217, Vol 2, for more detail.)

### **5.9.2. Turns after Takeoff, Low Approaches, or Closed Patterns.**

5.9.2.1. Do not turn after a takeoff, touch and go, or low approach until at least 400 feet above the departure end of the runway (DER) elevation, at a safe airspeed, and past the departure end of the runway (if visible) unless:

5.9.2.1.1. Specifically cleared by the controlling agency.

5.9.2.1.2. Safety dictates otherwise.

5.9.2.1.3. Required by local procedures.

5.9.2.1.4. Required by the published departure procedure.

5.9.2.2. The 400 foot restriction does not apply when executing a closed pattern.

### **5.9.3. Traffic Pattern Procedures.**

5.9.3.1. At Air Force installations, fly the traffic pattern published in the local flying procedures publication or FLIP, unless otherwise directed.

5.9.3.2. At other than Air Force installations, fly traffic patterns as directed by the control tower or published in FLIP, FAR Part 91 Subpart B, or the AIM.

5.9.3.3. At airports with no control tower, follow the standard light signals or visual indicators that prescribe the direction of traffic and landing runway. Departures must comply with the appropriate route for the airport. (Refer to AIM for detailed information.)

5.9.3.4. Helicopters should avoid the flow of fixed-wing aircraft. Helicopters that can maintain an airspeed compatible with fixed wing traffic may fly in the rectangular pattern.

5.9.4. Helicopter Landing Areas. Helicopters may operate from other than established landing areas (fields, highways, parks, etc.) if:

5.9.4.1. A military requirement exists and the user receives permission to use the area for landing, safeguards exist to permit operations without hazard to persons or property, and no legal objections are apparent.

5.9.4.2. Conducting an operational mission.

5.9.5. Night Operations. PICs will adhere to the following guidance during night operations:

5.9.5.1. Fixed wing aircraft must not be operated from a runway unless it is outlined with operating lights and clearly discernible. Covert IR runway lighting being used by qualified crews equipped with NVGs meets this requirement.

5.9.5.2. In Alaska, areas located north of 60° North latitude, Antarctica, and areas located south of 60° South latitude, aircraft may be operated to unlighted airports during the period of civil twilight. Use the latest version of the Air Almanac or computer program "LIGHT PC" to determine or calculate light and moon data.

5.9.5.3. (Added-AFMC) Helicopter Night Operations. The DFO may authorize helicopters on high priority operational or test missions to operate into and from unlighted areas as long as all available terrain and obstacle information is studied and all available lighting is used. Consideration must be given for the use of parachute flares or prepositioning other forms of lighting. Running takeoffs and landings will only be made to a runway or taxiway that is clearly discernible by lights. On all other missions (training, routine operational, or test missions, etc.), landings into remote and operational sites between official sunset and official sunrise are permitted if the mission is authorized and accomplished according to an approved night vision goggle (NVG) program or under the following conditions: the area is outlined by discernible lights or parachute flares, the pilot is familiar with the landing area through review of the site folder, and a daytime landing or overflight is accomplished, if feasible.

5.9.6. Landing Gear Reporting Procedures. Pilots operating retractable gear aircraft must report "gear down" to the ATC agency or runway supervisory unit after extending the landing gear. This report shall be made during any approach to an airport prior to crossing the runway threshold.

**5.10. Altitude Requirements.** Except for takeoff or landing, do not operate aircraft:

5.10.1. Emergency Landing. Below an altitude that, should an emergency landing become necessary, creates undue hazard to persons or property.

5.10.2. VFR. Under VFR above 3,000 feet AGL at altitudes or flight levels other than those specified in FLIP. In airspace under FAA jurisdiction, these altitudes do not apply when turning or holding in a holding pattern of 2 minutes or less.

5.10.3. Congested Areas. Over congested areas (cities, towns, settlements) or groups of people if the altitude does not ensure at least 1,000 feet above the highest obstacle within a 2,000-foot radius of the aircraft. Pilots flying helicopters in FAA airspace may operate at lower altitudes and in closer proximity if they do not create a hazard to persons or property on the surface.

5.10.4. Noncongested Areas. Over noncongested areas at an altitude of less than 500 feet above the surface except over open water, in special use airspace, or in sparsely populated areas. Under such

exceptions, pilots must not operate aircraft closer than 500 feet to any person, vessel, vehicle, or structure. Pilots flying helicopters in FAA airspace may operate at lower altitudes and in closer proximity if they do not create a hazard to persons or property on the surface.

5.10.5. Flight over National Parks. Mission permitting, not less than 2,000 feet above the terrain of the following areas: national parks, monuments, seashores, lake shores, recreation areas, and scenic river ways administered by the National Park Service; national wildlife refuges, big game refuges, game ranges, and wildlife refuges administered by the US Fish and Wildlife Service; and wilderness and primitive areas administered by the US Forest Service. This paragraph is not applicable to special use airspace, low-altitude tactical navigation areas, and MTRs. Higher altitudes may exist for specific areas. (See AP/1B and sectional aeronautical charts.)

**5.11. Disaster Areas.** Pilots shall not operate their aircraft within a designated disaster area. NOTAMs list disaster areas. Exceptions are permitted when an aircraft is:

- 5.11.1. Aiding in airborne relief for the area.
- 5.11.2. Going to or from an airport in the area, but does not hamper or endanger relief activities.
- 5.11.3. On a flight that has been specifically cleared by ATC.

**5.12. Altimeter Settings.** Set altimeters according to FLIP General Planning and Area Planning documents.

**5.13. Simulated Instrument Flight.**

5.13.1. Restrictions. The following restrictions apply to simulated instrument flight:

- 5.13.1.1. The aircraft must be equipped with a functional two-way radio.
- 5.13.1.2. A safety observer, either a current and qualified pilot or fighter Weapons Systems Operator (WSO), able to see outside at all times, should accompany the flight whenever possible, either as a crewmember or in a chase aircraft.
- 5.13.1.3. If a chase aircraft is used, maintain continuous visual contact and two-way communications between aircraft.

5.13.2. Practice Instrument Approaches. Approaches conducted in other than actual weather conditions (IMC). Although controlling the aircraft primarily by reference to the flight instruments, the PIC must be able to see the ground, surrounding terrain, and when established on the final segment of the approach, the airport environment.

**NOTE:** These approaches meet the requirement for primary simulated instrument time because the PIC has chosen to fly the approach using flight instruments as the primary reference for maintaining aircraft attitude.

5.13.2.1. Practice instrument approaches, including approaches flown under VFR (see paragraph 8.1.3.) will be conducted IAW Chapter 8 of this instruction.

5.13.2.2. Safety Observers. Practice approaches may be conducted without a safety observer (as defined in paragraph 5.13.1.2.) if the PIC is instrument qualified and current in the type of approach being flown. When flying a practice approach without a safety observer, PICs must

maintain a composite crosscheck sufficient to establish situational awareness as to terrain and other traffic. PICs are not relieved of their responsibility to see and avoid other traffic.

5.13.3. Vision Restricting Devices. MAJCOMs must approve the use of vision restricting devices (hoods, Foggles, etc) in their supplement to this instruction. Vision restricting devices will not be used without a safety observer (as defined in paragraph 5.13.1.2.).

5.13.3.1. MAJCOMs must provide specific approval for use of these devices for takeoffs and landings.

5.13.3.1. (AFMC) Use of vision restricting devices during takeoffs and landings is approved when required by a test plan. Observers will be pilot qualified in the aircraft flown, have direct access to the flight controls, have full view of the flight instruments, and be able to see outside.

5.13.3.2. At least 2,000 ft of obstruction clearance is required when using vision restricting devices if the safety observer:

5.13.3.2.1. Is not qualified as first pilot or copilot in the aircraft.

5.13.3.2.2. Does not have full view of the flight instruments.

5.13.3.2.3. Does not have access to the flight controls.

5.13.3.2.4. Is in a chase aircraft.

#### **5.14. Simulated Emergency Flight Procedures :**

5.14.1. Restrictions.

5.14.1.1. The following restrictions apply to simulated emergencies:

5.14.1.1.1. Do not practice emergency procedures with passengers on board.

5.14.1.1.2. Single pilot aircraft require day Visual Meteorological Conditions (VMC).

5.14.1.1.3. Multi-pilot aircraft in day IMC require weather conditions at or above published circling minimums for the approach to be flown.

5.14.1.1.4. Multi-pilot aircraft at night require weather conditions at or above 1,000 foot ceiling and 2 SMs visibility or circling minimums, whichever is higher.

5.14.1.2. MAJCOMs may authorize simulated emergencies during the period of civil twilight, in Alaska and other areas exceeding 60° latitude (see glossary for definition: civil twilight).

5.14.2. Required MAJCOM Guidance. MAJCOMs must publish guidance for practicing simulated emergency takeoffs, approaches, and landings. This guidance must include, as a minimum:

5.14.2. (AFMC) Guidance for practicing emergency procedures is contained in AFI 11-2FT Vol 3 and the MDS specific attachments. The DFO may approve exceptions only when required as part of an approved test plan. Document approval in the test plan or flight authorization.

5.14.2.1. Procedures when an instructor pilot or flight examiner does not have immediate access to the aircraft controls.

5.14.2.2. Instructions to minimize actual engine shutdown when a reduction of power suffices.



5.14.2.3. Restrictions on the practice of fixed-wing Simulated Flameout (SFO) or forced landing approaches unless:

5.14.2.3.1. Aircraft T.O.s furnish specific guidance for performing SFO or forced landing approaches.

5.14.2.3.2. Those approaches conform to T.O. patterns.

5.14.2.3.3. The preflight briefing contains SFO procedures.

5.14.2.3.4. Pilots fly the approaches at military airfields or at P designated fields (where letters of agreement are in effect) that have established SFO patterns. Also, the airport must have an active tower or Runway Supervisory Unit (RSU), enough runway for that aircraft, and proper crash and rescue equipment.

5.14.2.3.5. The practice approaches are coordinated with ATC agencies responsible for the airspace that the SFO or forced landing pattern transits.

5.14.3. (Added-AFMC) The DFO may allow a Federal Aviation Administration (FAA) flight examiner (FE) to observe pilot or flight engineer performance for an airline transport pilot or flight engineer qualification evaluation given as part of an Air Force checkride. The FAA FE will occupy an observer position only. All restrictions of this supplement apply. Field units will retain a copy of the written approval for 2 years.

## **5.15. Touch-and-Go Landings.**

5.15.1. Touch-and-go landings are authorized if required by courses in AFCAT 36-2223.

5.15.2. MAJCOMs may authorize touch-and-go landings in any command-operated aircraft.

5.15.2. (AFMC) Touch-and-go landings are authorized in any command operated aircraft provided all requirements of AFI 11-2FT Vol 3 and AFI 11-2FT Vol 1 are met.

5.15.3. MAJCOMs must provide explicit guidance in its command supplement about operating conditions and pilot qualifications.

## **5.16. Dropping Parachutists or Objects.**

5.16.1. Restrictions. The PIC will not allow the dropping of parachutists or objects from the aircraft except:

5.16.1. (AFMC) Parachutist airdrops will be conducted according to AFI 11-410, *Personnel Parachute Operations*. Other airdrops will be conducted under approved test plans or locally developed procedures.

5.16.1.1. In an emergency.

5.16.1.2. When mission requirements dictate.

5.16.2. MAJCOM Responsibilities. MAJCOMs will establish procedures to ensure airdrops comply with applicable directives.

5.16.3. PIC Responsibilities. The PIC will:

5.16.3.1. When jettisoning fuel and circumstances permit, notify the appropriate ATC or flight service facility of intentions, altitude, location, and when the operation is complete.

5.16.3.2. Drop chaff containing rope elements according to AFI 13-201, *US Air Force Airspace Management*, and FAA Handbook 7610.4, *Special Military Operations*.

5.16.3.3. Report any accidental loss of equipment or aircraft parts or jettisoning of cargo according to AFMAN 10-206, *US Air Force Reporting Instructions*, and 91-204, *Investigating and Reporting US Air Force Mishaps*.

## **5.17. Aircraft Lighting.**

5.17.1. Reduced Lighting. MAJCOMs may authorize reduced or light-out operations in restricted and warning areas in the MAJCOM supplement to this instruction.

5.17.1. (AFMC) Reduced or light-out operations within restricted and warning areas are approved for AFMC aircraft when operational or test requirements dictate. DFOs will establish policies for such lighting in the unit supplement to AFI 11-2FTv3.

5.17.1.1. Formation Lighting. MAJCOMs may authorize formation flights to vary their lighting configuration according to the aircraft type and mission requirement. The MAJCOM must ensure guidance on this type of operation is provided and that it ensures adequate visual identification of the formation.

5.17.1.1. (AFMC) When operating outside restricted or warning areas, one aircraft in the formation will display appropriate lighting. Others may operate with reduced lighting as safety, operational and test conditions permit.

5.17.2. Position Lights. Display position lights between the hours of official sunset and sunrise:

5.17.2.1. Immediately before engine start and when an engine is running. Aircraft that do not have power available before start shall turn them on as soon as power is available.

5.17.2.2. When parked in an area likely to create a hazard or while being towed, unless clearly illuminated by an outside source.

5.17.3. Anticollision and Strobe Lights. Anticollision lights and strobe lights are not the same. For the purposes of this section, strobe lights are systems such as wingtip strobes or other similar strobe light installations.

5.17.3.1. Ground Operations. Aircraft equipped with red anticollision lights will display these lights immediately before engine start, or as soon as possible after engine start if aircraft systems preclude the use of these lights prior to start, to after engine shutdown.

5.17.3.2. Airborne Operations. Anticollision and strobe lights shall be operated as follows:

5.17.3.2.1. Anticollision lights must be on from takeoff to landing.

5.17.3.2.2. Strobe lights shall be operated IAW MAJCOM or flight manual guidance.

5.17.3.3. The PIC may turn off anticollision lights when it is in the best interest of safety to do so.

5.17.3.4. The PIC may continue the mission with the failure of any light of the anticollision light system to the first stop where repairs can be made.

5.17.4. Landing Lights.

5.17.4.1. Aircraft must have at least one operable landing light.

5.17.4.1.1. Helicopters equipped with a search light that provides sufficient light for landing may substitute that for an operable landing light.

5.17.4.2. Landing lights will be illuminated below 10,000 feet MSL, day or night, within operational constraints.

**5.18. Aerobatics and Air Combat Tactics.** Aerobatics and air combat tactics (including air to ground) must be performed in special use airspace, ATC-Assigned Airspace (ATCAA) or Military Training Routes (MTRs) according to the guidelines in AFI 11-214, *Aircrew, Weapons Director, and Terminal Attack Controller Procedures for Air Operations*.

**5.18. (AFMC)** Air Combat Tactics will adhere to guidelines of AFI 11-2FT Volume 3. Aerobatic maneuvers will not be performed below 5,000 feet AGL. Exception: Flight maneuvers approved according to AFI 11-209, *Air Force Participation in Aerial Events*, as part of an authorized air show.

**5.19. Participating in Aerial Events.** PICs will ensure compliance with AFI 11-209, *Air Force Participation in Aerial Events*, when participating in aerial events, demonstrations, and static displays.

**5.20. Smoking on Air Force Aircraft.** Smoking is prohibited on Air Force or contract aircraft. For exceptions see AFI 40-102, *Smoking in Air Force Facilities*.

**5.21. Landing with Hot Armament.** MAJCOMs will ensure local units develop procedures for handling aircraft that land with live armament to ensure the safe conduct of such operations.

**5.21. (AFMC)** Units that conduct operations with live armament will publish procedures for live/hung ordnance in the unit supplement to this instruction and/or in-flight guide.

5.21.1. Before landing with hot armament or practice munitions at a non-Air Force installation or an airfield where local procedures are not known, the PIC must:

5.21.1.1. Advise the tower of the circumstances.

5.21.1.2. Advise transient alert and other appropriate agencies.

5.21.1.3. Request taxi instructions to the designated dearming area.

5.21.2. After landing with hot armament at a non-Air Force installation or an airfield where the local procedures are not known, the PIC must:

5.21.2.1. Avoid taxiing into an area or position that could threaten personnel or equipment.

5.21.2.2. Before leaving the aircraft, ensure the ground crew is aware of the armament on board.

5.21.2.3. If necessary, request assistance from the nearest Air Force facility by the most expeditious means.

5.21.3. (Added-AFMC) Aircraft will not be delivered to a contractor facility with hot armament on board unless delivery is specifically required by the contract and approved by the cognizant contract administration office.

## **5.22. Pilot Weather Reports (PIREPs) and Air Reports (AIREPs).**

5.22.1. PIREPs. Pilots will immediately report hazardous weather conditions and volcanic activity to the ARTCC, terminal ATC, or FSS. Additionally, pilots are urged to report any significant flight condition information. Pilots operating in warning areas should forward significant weather reports to the appropriate controlling agency (ARTCC, military radar unit, AWACS, etc). In all cases, follow with a report to a Pilot-to-Metro Service (PMSV) to ensure rapid dissemination to other using agencies. See PIREP procedures in the Flight Information Handbook.

5.22.2. AIREPs. AIREPs are usually made over areas where weather information is limited or non-existent (for example, over an ocean). AIREPs also contain supplemental aircraft position information. MAJCOMs provide aircrew guidance on when to file an AIREP. When required, use AF Form 72, **Air Report (AIREP)**, for reporting. The pilot must brief the forecaster at the destination airfield on the weather conditions that prompted AIREPs and pass on any other significant weather information.

5.22.2. (AFMC) When mission requirements and crew workload permit, aircrews will file air reports for extended over water flights when actual weather encountered is significantly different from forecast.

## **5.23. Operating in the Vicinity of Thunderstorms.**

5.23.1. Operations into Thunderstorms. PICs shall not intentionally operate into a thunderstorm except when operating on a MAJCOM-approved mission specifically requiring thunderstorm penetration.

5.23.1. (AFMC) Missions requiring planned penetration of a thunderstorm require HQ AFMC/DO approval.

5.23.2. Takeoff, Approach, and Landing. Pilots will not take off, land, or fly an approach at an airport if a thunderstorm is producing hail, strong winds, gust fronts, heavy rain, lightning, windshear, and (or) microbursts.

5.23.3. Flight Planned Route. When observed or reported thunderstorm activity adversely affects the flight plan route, pilots will delay the scheduled mission, alter the route of flight to avoid the thunderstorm activity, or proceed to a suitable alternate. Pilots shall use all available information including radar, PMSV, and PIREPs to avoid thunderstorm activity.

5.23.3. (AFMC) Thunderstorm avoidance procedures are listed in AFI 11-2FT Vol 3.

**NOTE:** Lightning strikes and electrostatic discharges can occur in what may look like benign conditions; a thunderstorm does not have to be present for these discharges. See AFH 11-203, Weather for Aircrews, for detailed information on thunderstorms, lightning, and electrostatic discharge.

## **5.24. Wake Turbulence and Windshear. Pilots will:**

5.24.1. Report Wake Turbulence. Notify ATC when encountering wake turbulence on any approach.

5.24.2. Report Windshear. Immediately report a windshear or microburst encounter on takeoff, approach, or landing to the most appropriate agency (control tower, approach control, PMSV) and, if possible, include:

5.24.2.1. Altitude of the encounter.

5.24.2.2. Loss or gain in airspeed or altitude.

5.24.2.3. Type of aircraft.

5.24.2.4. Location of occurrence (see AFH 11-203, *Weather for Aircrew*).

**5.25. Volcanic Activity.** Air Force aircraft will not be flown in an area of known or reported volcanic activity unless engaging in operations (such as rescue) specifically relating to the incident.

**5.26. Night Vision Goggles (NVG) Operations.** Aircrew will preflight NVGs prior to each use to ensure proper operation and optimum night visual enhancement. MAJCOMs will prescribe the use of NVGs during aircraft operations.

**5.26. (AFMC)** Operations and training requirements for NVG operations are specified in AFI 11-2FT, Volumes 1 and 3.

**5.27. Takeoff with Ice or Frost.** The PIC will not takeoff with ice, snow, or frost adhering to the wings, control surfaces, propellers, engine inlets, or other critical surfaces of the aircraft, unless authorized by the aircraft single manager or flight manual.

5.27.1. If approved by the aircraft single manager or flight manual:

5.27.1.1. A thin coating of frost is permitted on the fuselage, provided the letter and paint lines are visible.

5.27.1.2. Light frost (up to 1/8 inch thick) caused by supercooled fuel is permitted on the lower wing surface (i.e., below the fuel tank area) if the fuselage and all other control surfaces are free of all icing. If deicing is required on any other aircraft surface, the underwing frost shall also be removed.

5.27.2. Information on the removal and prevention of frozen precipitation is contained in T.O. 42C-1-2, *Anti-Icing, De-Icing and Defrosting of Parked Aircraft*.

**5.28. Night Approaches.** MAJCOMs shall determine procedures governing the use of instrument approaches while operating in night VMC conditions.

**5.28. (AFMC)** When operating in night VMC, except when mission or training requirements dictate otherwise, aircrew will land using precision glidepath guidance. This glidepath guidance can either be from a precision instrument approach or from an approach lighting system. Acceptable types of glidepath guidance are contained in AFMAN 11-217, Volume 1, Chapters 14 and 15. Aircrew should complete a thorough review of the point of intended landing and the surrounding terrain and obstacles prior to arrival.

## Chapter 6

### LIFE SUPPORT SYSTEMS

#### 6.1. General Information.

6.1.1. Indoctrination Course for Frequent Nonrated Flyers. Commanders of flying units must ensure that nonrated personnel and civilians who make regular and frequent flights receive an indoctrination course on emergency procedures and the proper use of emergency equipment. These courses must address mission and aircraft-specific equipment and procedures.

6.1.1.1. A PIC's preflight briefing does not qualify as an indoctrination course.

6.1.2. Passenger Briefing. The PIC will ensure that each passenger is briefed before flight. The briefing must include:

6.1.2.1. Location and use of emergency exits.

6.1.2.2. Location and use of parachutes and associated equipment (when appropriate).

6.1.2.3. Operation of emergency signals and passenger evacuation.

6.1.2.4. Use of the oxygen system.

**6.2. Personal and Survival Equipment.** MAJCOMs shall prescribe wear and use of the following equipment in conjunction with minimum standards established in relevant aircraft T.O.s:

**6.2. (AFMC)** AFI 11-301AFMC Sup1, *Aircrew Life Support Program*, prescribes wear and use of personal and survival equipment.

6.2.1. Parachutes.

6.2.2. Seat belts, harnesses, or safety belts.

6.2.2. (AFMC) Seat and Safety Belt Requirements. Refer to AFI 11-2FT Vol 3.

6.2.3. Personal equipment, including helmets, oxygen masks, anti-G equipment, flight clothing, and flight gloves.

6.2.4. Aircraft survival kits and optional components.

6.2.5. Individual survival equipment, including survival vests and anti-exposure suits.

6.2.6. Flotation equipment, including life rafts and life preservers.

6.2.7. Pressure suits above flight level (FL) 500. (MAJCOMs and ANG establish specific time and altitude limits and recovery procedures.)

6.2.7. (AFMC) Pressure Suit Flight Requirements. Refer to AFI 11-2FT Vol 3

#### 6.3. Spectacles, Contact Lenses, and Night Vision Goggles (NVG).

6.3.1. Spectacles. While performing aircrew duties, crewmembers must use only those spectacles fabricated by military optical fabrication laboratories or commercial spectacles approved by HQ AFMOA/SGPA. Each local eye care clinic will maintain details regarding these specifications.

6.3.2. Contact Lenses. Crewmembers who want to wear contact lenses must consult with their unit flight surgeon and meet criteria and follow guidelines outlined in the USAF Contact Lens Implementation Plan.

6.3.3. Spare Sets. Crewmembers who wear corrective spectacles or contact lenses must carry a spare set of clear prescription spectacles on their person while performing aircrew duties.

6.3.4. NVGs. Crewmembers must undergo an initial certification course, emphasizing preflight procedures and goggle optimization or limitations, prior to their initial flight with NVGs. An appropriately trained instructor, assisted by a flight surgeon or a designated representative, will conduct this course (see AFI 48-123, *Medical Examination and Standards*).

#### **6.4. Oxygen Requirements.**

6.4.1. Crew. Each crewmember shall use supplemental oxygen anytime the cabin altitude exceeds 10,000 ft.

6.4.1.1. Helicopter Exception. Air Force helicopters may be operated above 10,000 feet MSL without supplemental oxygen with the following restrictions:

6.4.1.1.1. Operations must be mission essential.

6.4.1.1.2. Maximum of 1 hour between 10,000 and 12,500 feet MSL.

6.4.1.1.3. Maximum of 30 minutes between 12,500 and 14,000 feet MSL.

6.4.1.1.4. Total flight time above 10,000 feet MSL shall not exceed 1 hour.

6.4.1.1.5. Supplemental oxygen must be used above 14,000 feet MSL.

6.4.1.1.6. Should any person on the aircraft experience hypoxia symptoms, the PIC will immediately descend below 10,000 feet MSL, land at a suitable location, and obtain medical assistance from a flight surgeon or civilian designated aviation medical examiner. The affected person shall not continue the flight unless authorized by either medical authority.

6.4.1.1.7. Aircrews required to conduct these operations must receive altitude chamber training every 3 years IAW AFI 11-403, *Aerospace Physiological Training Program*.

6.4.2. Unpressurized Aircraft. The following restrictions apply to aircraft that are being operated unpressurized.

6.4.2.1. Oxygen must be provided for occupants when a flight exceeds 3 hours duration between 10,000 and 13,000 ft MSL.

6.4.2.2. 13,000 ft MSL shall not be exceeded with occupants on board who do not have oxygen.

6.4.2.3. FL 250 shall not be exceeded even if occupants on board have oxygen.

6.4.3. Pressurized Aircraft. Pilots flying pressurized aircraft maintaining a cabin altitude of 10,000 feet or less, will:

6.4.3.1. Have an oxygen mask on if flying a single pilot aircraft above FL 350.

6.4.3.2. If flying a multi-pilot aircraft use the oxygen equipment prescribed in Table 6.1.

6.4.4. Oxygen Supply. The PIC shall ensure that sufficient oxygen is aboard the aircraft before take-off to fly the planned mission.

#### 6.4.5. Procedures for Loss of Cabin Pressure:

6.4.5.1. If the aircraft loses cabin pressure, the pilot must initiate an immediate descent to the lowest practical altitude, preferably below 18,000 feet, but in no case allow cabin altitude to remain above 25,000 feet unless occupants are wearing functional pressure suits.

6.4.5.2. If the aircraft loses pressure and any occupant lacks functioning oxygen equipment, the pilot must descend to maintain an altitude of 13,000 ft MSL or less and comply with paragraph 6.4. above.

6.4.5.2. (AFMC) When any occupant of the aircraft lacks functional oxygen equipment, mission planning should consider recovery at a suitable airfield in the event of a loss of cabin pressurization.

6.4.5.3. Report a loss of cabin pressurization IAW AFI 91-204, *Investigating and Reporting US Air Force Mishaps*.

6.4.5.4. If an individual appears to be suffering decompression sickness, a crewmember should administer 100 percent oxygen to that individual. The pilot must descend as soon as practical and land at the nearest suitable installation where medical assistance can be obtained. Decompression sickness may occur up to 12 hours after mission completion. The affected person shall not continue the flight unless authorized by a flight surgeon or civilian designated aviation medical examiner.

**Table 6.1. Oxygen Requirements for Pressurized Aircraft.**

	Pilot(s)	Flight Engineer	Other Flight Deck Crew	Cabin/Cargo Area Crew	Pax
10,000 ft through FL250	R	R	R	A	NA
Above FL250 through FL350	One I/ One R	I	R	A	A
Above FL350 through FL410 (both pilots in seat)	I	I	R	A	A
Above FL350 through FL410 (only one pilot in seat)	One O/ One A	I	R	A	A
Above FL410 through FL450	One O/ One I	I	R	A	A
Above FL450 through FL500	One O/ One I	I	I	A	A
Above FL500 through FL 600 (pressure breathing for altitude system/get-me-down scenario)	G	G	G	G	G
Above FL500 (Sustained)	S	S	S	S	S

#### LEGEND:

**A** - Have oxygen available. Individuals required to have oxygen available must carry portable oxygen (such as walk-around bottles) on their person anytime they are moving about the cabin/ cargo area. The requirement to have oxygen available can also be satisfied by placing sufficient portable oxygen units or



extra oxygen outlets with masks throughout the cabin/cargo area so that any crewmember or passenger has quick access to oxygen regardless of where they are in the cabin/cargo area should a loss of pressurization occur.

**R** - Have oxygen readily available. Individuals required to have oxygen readily available must have a functioning system and mask located within arms reach, and the regulator must be set to 100 percent and ON (if the system contains an operator adjustable regulator).

**I** - Have oxygen immediately available. Crewmembers who are required to have oxygen immediately available must wear helmets with an oxygen mask attached to one side, or have available an approved quick-donning/sweep-on mask properly adjusted and positioned. Regulators shall be set to 100 percent and ON.

**O** - Oxygen mask ON. Regulator ON and normal.

**G** - Wear a partial pressure suit. Suit must provide 70mm Hg of assisted positive pressure breathing for altitude.

**S** - Wear a pressure suit...Suit must provide a total pressure (atmospheric plus suit differential) of at least 141mm Hg to the head and neck with adequate body coverage and pressurization to prevent edema and embolism.

## Chapter 7

### VISUAL FLIGHT RULES (VFR)

#### 7.1. General Information.

7.1.1. Air Force fixed-wing aircraft will fly under visual flight rules (VFR) when required for mission accomplishment.

7.1.1.1. PICs will request and utilize VFR Radar Advisory Services (Flight Following) to the maximum extent practical.

7.1.2. PICs will review the FLIP planning document appropriate to the area of operations to:

7.1.2.1. Ensure that VFR operations are authorized.

7.1.2.2. Check for any applicable restrictions.

7.1.3. If the weather prevents continued flight under VFR on the planned route, the PIC will alter the route of flight, as necessary, so as to continue operations under VFR:

7.1.3.1. To the destination.

7.1.3.2. Until obtaining an IFR clearance.

7.1.3.3. To landing at a suitable location.

#### 7.2. Weather Requirements for Filing VFR .

7.2.1. Fixed-Wing Aircraft. The following requirements apply to filing VFR in fixed-wing aircraft:

7.2.1.1. The forecast weather for the planned route of flight conducted under VFR must be equal to, or greater than 1,500 feet and 3 SMs.

7.2.1.2. The forecast at the destination or point of changeover on a composite flight plan (a flight conducted according to both VFR and IFR) must be valid for  $\pm 1$  hour of the estimated time of arrival (ETA).

7.2.2. Helicopters. The forecast weather for the planned route of flight to be conducted under VFR must ensure compliance with the requirements listed in Table 7.1. or Table 7.2. as appropriate.

#### 7.3. Flight Operations under VFR .

7.3.1. FAA Airspace . PICs operating under VFR in FAA airspace shall adhere to the weather minimums listed in Table 7.1.

7.3.2. Non-FAA Airspace. PICs operating under VFR in other than FAA airspace will:

7.3.2.1. Adhere to the ICAO VFR weather minimums listed in Table 7.2.; or

7.3.2.2. Comply with restrictions published in FLIP or FCG.

7.3.3. Special VFR (SVFR).

7.3.3.1. Fixed-Wing Aircraft. Air Force fixed-wing aircraft shall not fly under SVFR.

7.3.3.2. Helicopters. Helicopters may fly under Special VFR (SVFR) with the following provisions:

7.3.3.2.1. Obtain an ATC clearance.

7.3.3.2.2. Remain clear of clouds.

7.3.3.2.3. If operating under the clear of clouds weather criterion, fly at a speed that will allow the opportunity to see any air traffic or obstruction in time to avoid a collision.

**Table 7.1. VFR Cloud Clearance and Visibility Minimums.**

<b>I T E M</b>	<b>A  FAA Airspace Class</b>	<b>B  Prevailing or Flight Visibility</b>	<b>C  Distance from Cloud</b>
1	Class A	Not Applicable	Not Applicable
2	Class B	3 SMS	Clear of Clouds
3	Class C and Class D	3 SM	500 feet below 1,000 feet above, and 2,000 feet horizontal
4	Class E and G Below 10,000 feet MSL (Fixed-wing)	3 SMS	500 feet below, 1,000 feet above, and 2,000 feet horizontal
5	Class E and G At or above 10,000 feet MSL (Fixed-wing)	5 SMS	1,000 feet below, 1000 feet above, and 1 SM horizontal
6	Class E Below 10,000 feet MSL (Helicopter)	3 SMS	500 feet below, 1,000 feet above, and 2000 feet horizontal
7	Class E At or above 10,000 feet MSL (Helicopter)	5 SMS	1,000 feet below, 1,000 feet above and 1 SM horizontal
8	Class G Below 1,200 feet AGL (Helicopter)	Day: 1/2 SM Night: 1 SM	Clear of clouds if operated at a speed that allows the pilot adequate opportunity to see any air traffic or obstructions in time to avoid a collision.
9	Class G Above 1,200 feet AGL and Below 10,000 feet MSL (Helicopter)	Day: 1 SM Night: 3 SMS	500 feet below, 1,000 feet above, and 2,000 feet horizontal
10	Class G Above 10,000 feet MSL (Helicopter)	5 SMS	1,000 feet below, 1,000 feet above, and 1 SM horizontal

**Table 7.2. ICAO VFR Cloud Clearance and Visibility Minimums.**

<b>I T E M</b>	<b>A  ICAO AIRSPACE CLASS</b>	<b>B  Flight Visibility</b>	<b>C  Distance from Cloud</b>
1	Class A	Not Applicable	Not Applicable
2	Class B	8 KMs above 10,000 feet MSL. 5 KMs below 10,000 feet MSL	Clear of clouds
3	Class C, D, and E	Same as Class B.	1,500 m. horizontal 300 m (1,000 feet) vertical
4	Class F and G Above 900 (3,000 feet) MSL or above 300m (1,000 feet) above terrain, whichever is higher. (Fixed-wing)	Same as Class B.	Same as Class C, D, and E.
5	Class F and G At and below 900 m (3,000 feet) or 300 m (1,000 feet) above terrain whichever is higher. (Fixed-wing)	5 Kms	Same as Class C, D, and E.
6	Class F Above 900 m (3,000 feet) or 300 m (1,000 feet) above terrain whichever is higher. (Helicopter)	8 KMs above 10,000 feet MSL. 5 KMs below 10,000 feet MSL	1,500 m. horizontal 300 m (1,000 feet) vertical.
7	Class F and G At and below 900 m (3,000 feet) or 300 m (1,000 feet) above terrain whichever is higher. (Helicopter)	5 KMs (See Note).	Clear of cloud and in sight of the surface.
8	Class G Above 900 m (3,000 feet) or 300 m (1,000 feet) above terrain whichever is higher. (Helicopter)	8 KMs above 10,000 feet MSL. 5 KMs below 10,000 feet MSL	1,500 m. horizontal 300 m (1,000 feet) vertical

**NOTE:** Helicopters may be permitted by ATC to operate in lower visibility conditions if maneuvered at a speed that will give adequate opportunity to observe other traffic or any obstacles in time to avoid collision.

## Chapter 8

### INSTRUMENT FLIGHT RULES (IFR)

**8.1. IFR Requirements.** Air Force fixed-wing aircraft will fly under Instrument Flight Rules (IFR) to the maximum extent possible without unacceptable mission degradation.

**8.1. (AFMC)** Accomplish depot and flight test flights during day VMC to the greatest extent possible. Refer to AFI 11-2FT Vol 3 for more specific weather requirements.

8.1.1. Category II/III. Pilots shall not fly Category II or III approaches unless the appropriate crewmembers and the aircraft are properly certified.

8.1.1.1. MAJCOMs will certify their aircrews and aircraft.

8.1.1.1. (AFMC) Cat II and Cat III operations in IMC below Cat I minimums are restricted to approved test plans only. Certification will be handled on a case by case basis. Submit requests to HQ AFMC/DOV.

8.1.2. IFR Required.

8.1.2.1. Pilots must fly under IFR if:

8.1.2.1.1. Weather conditions do not permit flight according to VFR.

8.1.2.1.2. Operating in Class A airspace.

8.1.2.1.3. Operating a fixed-wing aircraft within federal airways. Do not consider crossing airways as "within" airways.

8.1.2.1.4. Operating a fixed-wing aircraft at night, unless the mission cannot be conducted under IFR.

8.1.2.2. Practice Instrument Approaches Under Visual Flight Rules (VFR). MAJCOM approval is required to practice instrument approaches under VFR. In addition to MAJCOM approval, the following restrictions apply:

8.1.2.2. (AFMC) AFMC crews are authorized to conduct practice instrument approaches under VFR.

8.1.2.2.1. VFR cloud clearances and visibilities (Chapter 7) must be maintained.

8.1.2.2.2. Terminal radar service must be available and used.

8.1.2.2.3. Pilots must request authorization from ATC to fly the published missed approach.

8.1.3. (Added-AFMC) Military Accepts Responsibility for Separation of Aircraft (MARSA). The unit DFO is authorized to develop agreements for special IFR operations according to the MARSA concept. See FAA Handbook 7610.4, Special Military Operations, and FLIP for further guidance.

**8.2. ATC Clearance.** Pilots must obtain an ATC clearance before commencing any IFR flight that originates in or penetrates controlled airspace.

### 8.3. Destination Requirements for Filing Purposes

8.3.1. Destination with a Published Approach. Pilots may file IFR to a destination with a published instrument approach capable of being flown with navigational equipment aboard the aircraft.

#### 8.3.1.1. Published Approach Definition.

8.3.1.1.1. A published approach is defined as:

8.3.1.1.1.1. Any DoD or National Oceanic Atmospheric Administration (NOAA) FLIP procedure.

8.3.1.1.1.2. A local use procedure developed according to AFMAN 11-230, *Instrument Procedures*, and approved by the host MAJCOM.

8.3.1.1.1.3. A published radar approach. For pilots to fly a published radar approach or instrument approach procedure that requires radar to define a fix essential for flying the approach, a nonradar facility must provide a positive aircraft position within 25 NMs of the airfield. Pilots operating in Class A airspace may file to the nearest nonradar facility or fix (regardless of distance from the terminal) and request radar vector service to the terminal.

8.3.1.1.1.4. Any product not published in a DoD or NOAA FLIP document, but approved by the MAJCOM, for which an operational requirement exists. Before MAJCOM grants approval, the MAJCOM Terminal Instrument Procedures (TERPS) office must review the product IAW AFMAN 11-230, unless the review has been waived IAW paragraph 8.3.1.1.2. below. The MAJCOM TERPS office shall inform aircrews when a product does not meet recognized obstruction clearance and (or) flight inspection criteria.

8.3.1.1.1.4. (AFMC) Approval of Non-DoD/NOAA and Local Use Procedures. Instrument procedures not published in either DoD or NOAA FLIP require a formal TERPS review, followed by AFMC/DO approval. The single point of contact for all requests is the AFMC TERPS office (HQ AFMC/DOA, DSN 986-0060, fax 986-1246). Submit requirements directly to the TERPS office (HQ AFMC/DOA) immediately upon mission notification. Minimum 15 days advance notice is desired. Instrument procedures are approved for specific missions, not blanket use. PICs will comply with restrictions and recommendations contained in the TERPS evaluation. Approval request must include airfield name/ICAO, desired procedure(s), copy of approach plate (or Jeppesen page number), mission date, POC and phone number.

8.3.1.1.2. Waiver of TERPS Review. The TERPS review required under paragraph 8.3.1.1. may be waived under the following provisions:

8.3.1.1.2.1. This waiver applies to nonstandard operations, defined as: an urgent requirement to fly short notice, humanitarian, contingency, MEDEVAC, "Special" Access and urgent State Department missions.

8.3.1.1.2.2. The applicable MAJCOM/DO, if an O-8 or above, may waive the TERPS review. If the DOs grade is below O-8, then waiver authority will lie with the first O-8 in the MAJCOM operational chain of command. This waiver authority will not be further delegated.

8.3.1.1.2.3. If the waiver authority is exercised, MAJCOMs will ensure the aircrew and the applicable TERPS office are aware the provisions of paragraph 8.3.1.1. have been waived.

8.3.2. Destination without a Published Instrument Approach . If there is no published approach at the destination capable of being flown with the navigational equipment aboard the aircraft, pilots may file IFR to a point en route (where forecast weather is VMC at the time of arrival) or to a point served by a published approach procedure (where the pilot can make a descent to VMC conditions) and then continue under VFR to the destination.

8.3.3. Weather . The following are the weather requirements for filing to a destination:

8.3.3.1. Fixed-Wing Aircraft . Weather for the ETA ( $\pm 1$  hour) at destination or recovery base must be at or above the lowest minimum published for an approach suitable for the aircraft concerned.

8.3.3.1.1. MAJCOMs may waive this requirement when operational necessity dictates the use of a destination forecast to be below minimums, but MAJCOMs must establish alternate recovery procedures, such as the use of two or more alternate airports, additional holding fuel, etc.

8.3.3.1.2. For a straight-in or sidestep approach, the forecast weather must meet only the published visibility requirements for that approach.

8.3.3.1.3. For a circling approach, the forecast weather must meet both the ceiling and prevailing visibility requirements.

8.3.3.2. Helicopters . Helicopter pilots shall adhere to the same weather requirements as fixed-wing aircraft with the following exceptions:

8.3.3.2.1. Helicopter pilots planning a fixed-wing approach procedure may use the Category A Minimum Descent Altitude (MDA) or Decision Height (DH), regardless of airspeed flown. The required visibility minimum may be reduced to one-half of the published visibility minimums for Category A aircraft, but in no case may the minimums be reduced to less than 1/4 SM or 1200 feet Runway Visual Range (RVR).

8.3.3.2.2. Helicopter pilots must use the published visibility minimums for "Copter Only" approaches as published.

8.3.3.3. TEMPO Conditions . Pilots may file to a destination whose forecast includes temporary (TEMPO) changes in ceiling and/or visibility that are lower than prescribed in 8.3.3.1. and 8.3.3.2., but an alternate may be required (see paragraphs 8.4. and 8.5.).

#### **8.4. When an Alternate is Required . This section prescribes when an alternate must be filed.**

8.4.1. Weather. The following weather requirements require the filing of an alternate.

8.4.1.1. Fixed-Wing Aircraft. Designate an alternate if, for the ETA ( $\pm 1$  hour) for the first point of intended landing (or each point of intended landing on a stopover flight plan), the worst weather (TEMPO or prevailing) is forecast to be less than:

8.4.1.1.1. A ceiling of 3,000 feet or

8.4.1.1.2. A visibility of 3 SMs or 2 SMs more than the lowest compatible published landing minimum visibility, whichever is greater (see Figure 8.1.).

8.4.1.2. Helicopters. Designate an alternate if, for the ETA ( $\pm 1$  hour) for the first point of intended landing (or each point of intended landing on a stopover flight plan), the worst weather (TEMPO or prevailing) is forecast to be less than:

8.4.1.2.1. A ceiling of 700 ft, or

8.4.1.2.2. A visibility of 1 SM (see Figure 8.2.).

#### 8.4.2. Additional Items Requiring an Alternate.

8.4.2.1. Regardless of weather, pilots must designate an alternate airport on all IFR flight plans when filing to a destination requiring any of the following to fly the planned approach.

8.4.2.1.1. Radar.

8.4.2.1.2. GPS is the only available NAVAID.

8.4.2.1.3. An unmonitored NAVAID.

8.4.2.2. Regardless of weather, pilots will file an alternate when the destination does not have weather reporting capability.

8.4.3. Exception for Remote or Island Destinations . MAJCOMs may authorize holding for a specified time in lieu of an alternate for those remote or island destinations for which designating an alternate is not possible.

8.4.3. (AFMC) A remote or island destination is defined as any aerodrome which, due to its unique geographic location, offers no suitable alternate (civil or military) within 2 hours flying time. Aircraft may hold at a remote or island destination, instead of designating an alternate airport, if all of the following conditions are met. There must be enough fuel on board, in addition to required reserves, to hold for at least 1 hour after arriving at the initial approach fix. From 1 hour before until 2 hours after estimated time of arrival, the worst weather is forecast to be at or above the alternate airport weather requirements for filing purposes. The forecast crosswind component corrected for runway condition reading (RCR) is within the recommended zone of the aircraft's landing crosswind chart.

8.4.3.1. MAJCOMs that authorize holding at a remote or island destination will prescribe weather criteria and recovery procedures.



Figure 8.1. Fixed-Wing Weather (WX) Requirements.

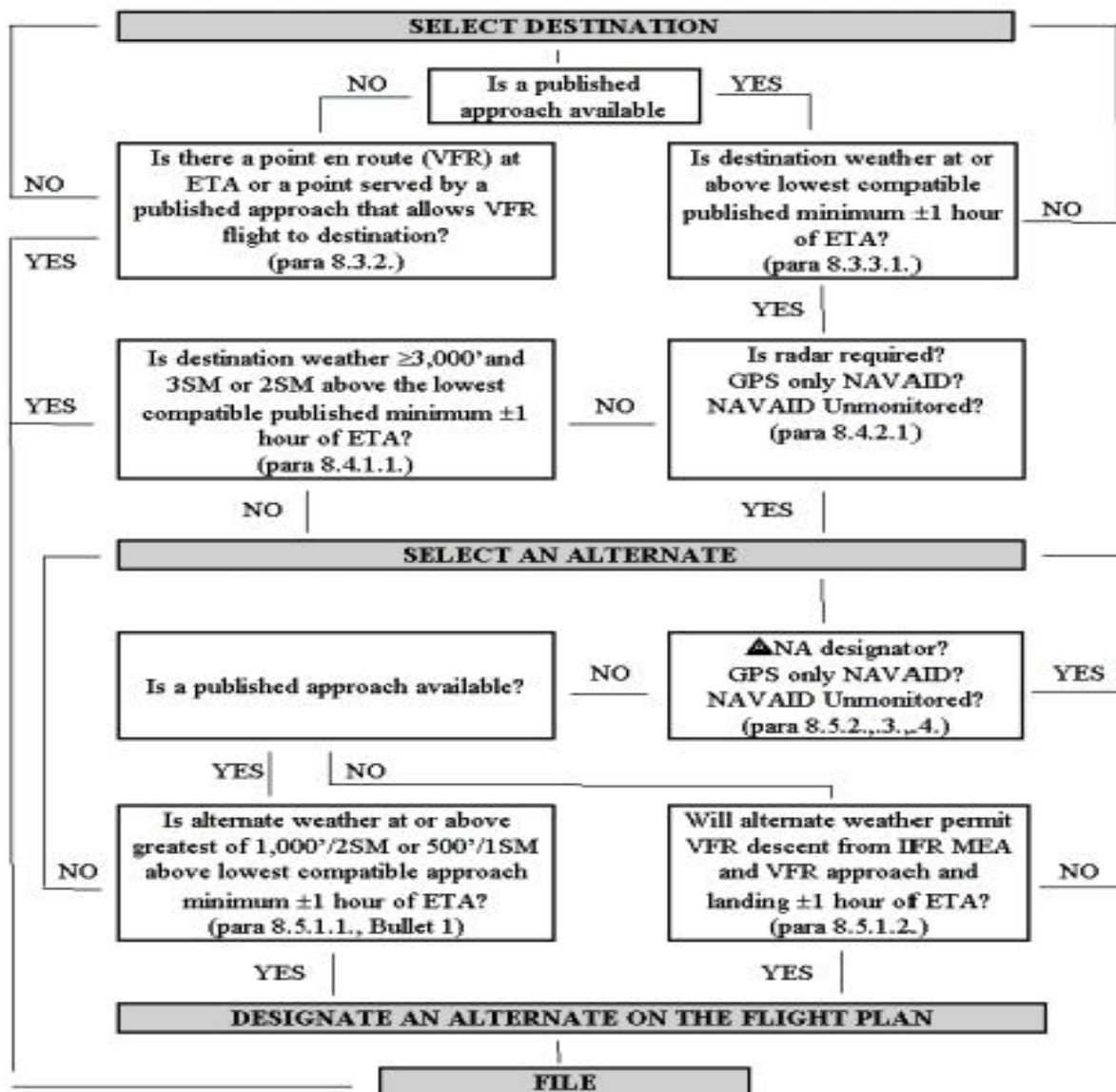
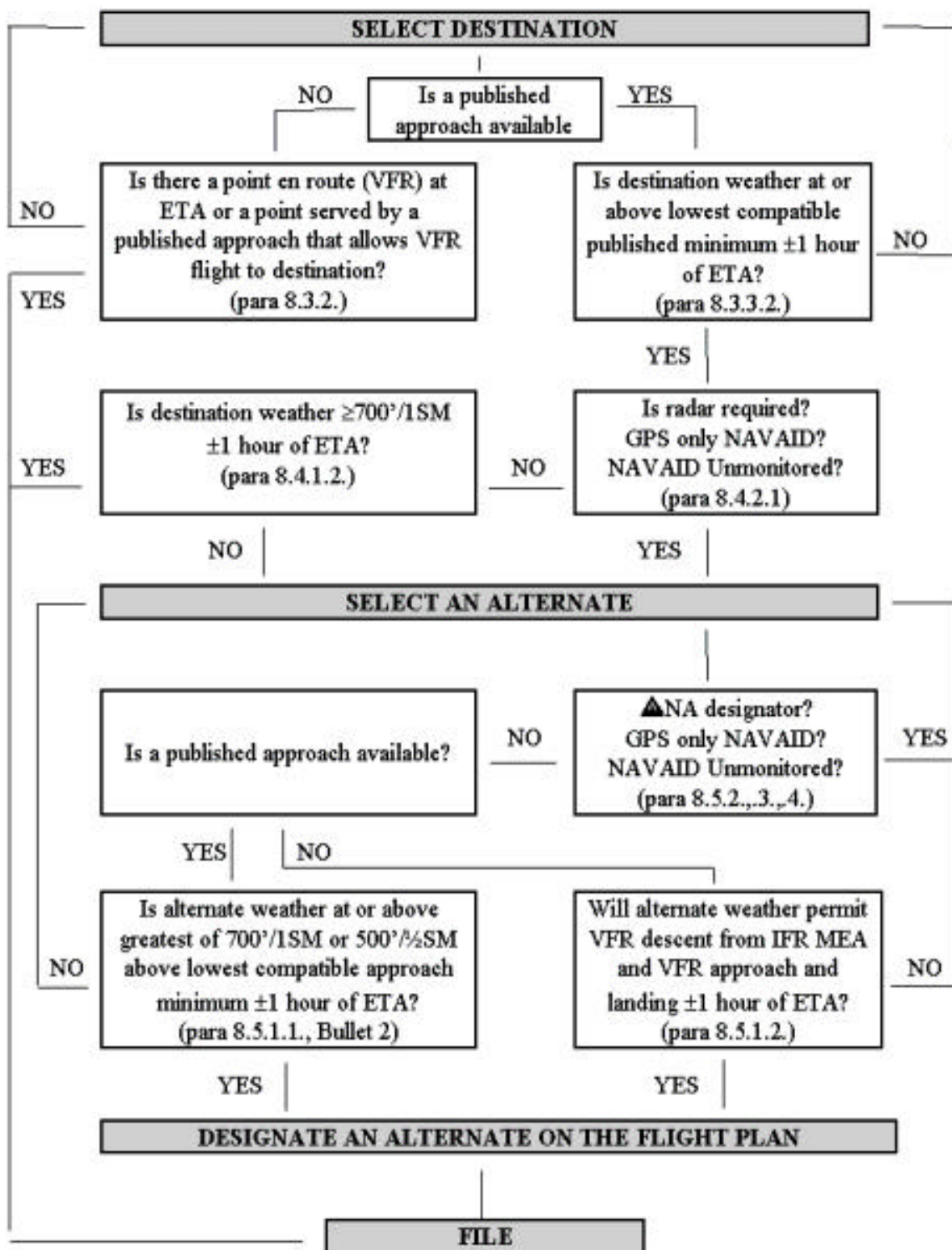


Figure 8.2. Helicopter Weather (WX) Requirements.



## 8.5. Selecting an Alternate.

8.5.1. Weather. For an airport to qualify as an alternate, the worst weather (TEMPO or prevailing) for the ETA ( $\pm 1$  hour) at the alternate airport must be forecast to be at or above the following:

8.5.1.1. With a Published Instrument Approach Procedure :

8.5.1.1.1. Fixed-Wing Aircraft. A ceiling of at least 1,000 feet or 500 feet above the lowest compatible published landing minimum, whichever is higher, and a visibility of 2 SMs or 1 SM above the lowest compatible published landing minimum, whichever is higher (see Figure 8.1.).

8.5.1.1.2. Helicopters. A ceiling of at least 700 feet or 500 feet above the lowest compatible published landing minimum, whichever is higher, and a visibility of 1 SM or 1/2 SM above the lowest compatible published landing minimum, whichever is higher (see Figure 8.2.).

8.5.1.2. Without a Published Instrument Approach Procedure . Forecast weather for the ETA ( $\pm 1$  hour) must permit a VFR descent from the IFR en route altitude to a VFR approach and landing.

8.5.1.3. Exception for Temporary Conditions. Pilots may select an airport as an alternate that includes a temporary condition in the forecast below that required in paragraphs 8.5.1.1. and 8.5.1.2. if the temporary condition is due to a thunderstorm or rain shower. In all cases, the forecast for the prevailing weather conditions must meet or exceed the requirements of paragraphs 8.5.1.1. and 8.5.1.2.

8.5.2. NA Designation. Do not specify an airport as an alternate if the approach plate for the required runway carries the NA designator except IAW 8.5.1.2. above.

8.5.3. Unmonitored NAVAID . Do not designate an airport as an alternate if the approach required to be flown is based on a NAVAID that has been NOTAMed as being unmonitored, except IAW paragraph 8.5.1.2. above.

8.5.4. GPS Approach Only Airport. Do not specify an airport as an alternate if the only approach available is a GPS approach, except IAW paragraph 8.5.1.2. above.

**8.6. Takeoff Minimums.** Pilots shall not takeoff when the existing weather is below the landing minimums for the specific aircraft unless specifically authorized by the applicable MAJCOM.

**8.6. (AFMC)** Command takeoff alternate requirements for tanker/transport/bomber aircraft are listed in table 8.1 (Added). For fighter/trainer aircraft, the DFO may authorize takeoff for operational requirements when existing weather is below landing minimums if the visibility is at least 1,600 feet runway visual range (RVR) or 1/4-mile and a suitable alternate is located within 30 minutes flying time. The reported and forecast weather at the alternate must meet alternate airport weather requirements for filing purposes, and the forecast crosswind component corrected for RCR must be within the recommended zone of the aircraft's landing crosswind chart.

**Table 8.1. (Added-AFMC) Departure Alternate Requirements for Tanker/Transport/Bomber Aircraft**

<b>If departure weather is:</b>	<b>A departure alternate is:</b>
At or above authorized ceiling and visibility landing minimums.	Not required.
Below either authorized ceiling or visibility minimums but RVR is 1600 GWHGary W. Hoggor greater (visibility ° mile or greater) -OR-Below GWHGary W. Hoggeither authorized ceiling or visibility minimums but RVR is 1200 or greater at the approach end and 1000 or greater at the departure end and runway centerline lights operational. (See Note 3)	Required. (See Notes 1 and 2)
<b>NOTE 1:</b> Alternate must be located within 30 minutes flight time with weather reported and forecast at or above approach minimums or 200- ¾ (RVR 2400), whichever is higher, for 1 hour after take-off.-OR-Alternate must be located within 2 hours flight time with weather forecast to be at least 500-1 above approach minimums but no lower than 700-2 for a precision approach or 800-2 for a non-precision approach for ETA at the alternate +/- one hour.	
<b>NOTE 2:</b> Aircraft must be able to maintain minimum enroute altitude to the alternate if an engine fails.	
<b>NOTE 3:</b> Must have centerline lighting and dual RVR display slave readouts for both approach and departure ends of the runway. For runways with triple RVR readouts, the pilot may use any two consecutive readouts to determine if the runway is usable for departure (aircraft performance permitting). For example, approach end RVR=800, midfield RVR=1700, departure end RVR=1000. If aircraft performance and runway length will permit taking off at midfield, this runway is usable for takeoff.	

8.6.1. MAJCOMs that permit takeoffs when the weather is lower than the published landing minimums shall prescribe substitute recovery procedures.

8.6.2. Civil contract carriers can operate from airports under Air Force jurisdiction using the takeoff minimums approved by the FAA and published in the air carrier's operations specifications.

**8.7. IFR Departures.** Aircrew must adhere to IFR departure procedures guidance published in AFMAN 11-217, Volume 1, *Instrument Flight Procedures*.

8.7.1. Authorized IFR Departure Methods.

8.7.1.1. There are three authorized methods of departing IFR:

8.7.1.1.1. Instrument Departure Procedures.

8.7.1.1.2. Departure Procedures (DPs), SIDs.

8.7.1.1.3. Published Instrument Departure Procedures (either graphic or textual).

8.7.1.1.4. Specific ATC Departure Instructions (includes radar vectors).

8.7.1.1.5. Diverse Departures.

**NOTE:** This does not restrict aircraft already airborne from departing IFR via the published missed approach procedure for the instrument approach being flown.

8.7.1.2. Approved Instrument Departure Procedures. An approved instrument departure procedure (DP, SID, or Published Instrument Departure Procedure) is defined as:

8.7.1.2.1. Any DoD or NOAA FLIP procedure.

8.7.1.2.2. A local use procedure developed according to AFMAN 11-230 and approved by the host MAJCOM.

8.7.1.2.3. Any product not published in a DoD or NOAA FLIP document, but approved by the MAJCOM for which an operational requirement exists. The MAJCOM Terminal Instrument Procedures (TERPS) office must review the product IAW AFMAN 11-230 before MAJCOM grants approval. The MAJCOM TERPS office shall inform aircrew when a product does not meet recognized obstruction clearance and (or) flight inspection criteria.

#### 8.7.2. General Guidance for IFR Departures.

8.7.2.1. Required Climb Gradient. The PIC will ensure the aircraft meets or exceeds the published climb gradient for the departure method being used (all engines operating). When no climb gradient is published, the aircraft must be able to climb at 200 feet per nautical mile (3.3%) or greater. Under no circumstances may the PIC plan to depart an airfield IFR using visual obstacle avoidance ("see-and-avoid") in lieu of meeting the required climb gradient.

8.7.2.2. Departure Planning. PICs of multi-engine aircraft must ensure the aircraft can clear all obstacles along the planned departure route with one engine inoperative.

8.7.2.3. Published Instrument Departure Procedures. Unless otherwise cleared by ATC, pilots will fly the published instrument departure procedure for the runway used.

8.7.2.4. Radar Vectors. Pilots are responsible for terrain and obstacle clearance until a radar vector is issued by ATC.

**NOTE:** The use of the term "Radar Contact" by a controller does not mean that a vector has been issued or that terrain and obstruction clearance responsibility has transferred to the controller. That responsibility is shared between pilot and controller when a vector is issued.

8.7.2.5. Engine-Out Departure Procedures . USAF aircrews now have published engine-out departure procedures for selected airfields and aircraft. These Jeppesen Ops-Data designed and published IFR procedures are applicable after the loss of an engine and, where available, shall be used for engine-out departure planning. To ensure procedures are updated and current, applicable procedures shall be retrieved prior to each mission from the official Jeppesen Departure Procedure web site. MAJCOMs will ensure aircrews receive appropriate training on these procedures prior to their authorized use within applicable MDS aircraft.

8.7.2.5. (AFMC) Missions requiring planned use of Jeppesen Special Departure Procedures require HQ AFMC/DOV approval.

8.7.3. No Authorized IFR Departure Method. If the airport does not have one of the authorized IFR departure methods described in paragraph 8.7.1, then an IFR departure is not authorized. The weather at takeoff must permit a VFR climb to an IFR MEA, an appropriate minimum IFR altitude as described in paragraph 8.9, or an altitude where radar vectors can be provided.

**8.8. Minimum Altitudes.** This section is not applicable to climbs and descents required for takeoff and landing.

8.8.1. On Airways . Pilots shall not fly lower than the MEA or MOCA published for the airway.

8.8.1.1. Pilots using the MOCA shall ensure that the altitude selected will provide suitable navigation facility and ATC radio communication reception.

8.8.2. Off Airways .

8.8.2.1. Pilots shall fly no lower than:

8.8.2.1.1. The OROCA.

8.8.2.1.2. The ORTCA.

8.8.2.1.3. An altitude that provides at least 1,000 feet of clearance above all obstacles within 5 nautical miles of the course to be flown in non-mountainous terrain or 2,000 feet in mountainous terrain. Mountainous terrain is designated by FAR 95.11.

8.8.2.2. Pilots using the OROCA or ORTCA shall ensure that the altitude selected will provide suitable navigation facility and ATC radio communication reception.

8.8.3. MTRs. Pilots operating on MTRs shall adhere to the minimum altitudes published in FLIP Area Planning.

**8.9. IFR Cruising Altitudes.**

8.9.1. Pilots should file requested altitudes for IFR flights in controlled airspace according to the cruising altitude diagram depicted on the appropriate en route chart.

8.9.2. Pilots operating in uncontrolled airspace shall maintain altitude IAW the diagrams published on the appropriate en route chart.

**8.10. IFR En route Navigation.** Pilots shall fly along the centerline of the direct course between NAVAIDS or fixes defining a published or unpublished route when, operating in controlled airspace under IFR unless:

8.10.1. Authorized by the controlling agency.

8.10.2. Operating in special-use airspace or on MTRs.

**8.11. In-Flight Communications.**

8.11.1. Position Reports . A pilot operating under IFR will continuously monitor appropriate ATC frequencies and follow Flight Information Handbook (FIH) instructions for position reports, lost communications, and radio procedures.

8.11.2. Navigation and Communication Equipment Malfunctions . When operating in controlled airspace under IFR, the PIC will immediately report to ATC the loss or impairment of navigational or air-to-ground communications capability according to instructions in the FIH.

**8.12. Cancellation of IFR Clearance.**

8.12.1. Cancellation. Pilots shall ensure compliance with Chapter 7 and paragraph 8.1. of this instruction before canceling IFR.

8.12.1.1. Pilots who cancel IFR shall ensure that a VFR flight plan is in effect for the remainder of the flight to ensure flight following.

8.12.1.2. Paragraph 8.12.1.1. does not apply if in radio contact with the destination tower.

### **8.13. Approach and Landing.**

8.13.1. Prior to Descent or Approach. Pilots shall not begin an en route descent or published approach if the weather required for the approach is below the required minimums.

8.13.1.1. Straight-In or Sidestep Approach. Weather must only be at or above the published visibility minimums.

8.13.1.2. Circling Approach . Weather must be at or above both the published ceiling and visibility minimums.

8.13.1.3. Helicopter Minima . Helicopter pilots using a fixed-wing approach procedure may use the Category A minima regardless of airspeed flown. The required visibility minimum may be reduced to one-half of the published visibility minimums for Category A aircraft, but in no case may the minimums be reduced to less than 1/4 SM or 1,200 feet Runway Visual Range (RVR). Helicopter pilots must use the published visibility minimums for "Copter Only" approaches as published.

8.13.2. After Beginning Descent or Approach . If a pilot has begun the en route descent or published approach and subsequently determines the weather is below minimums (visibility for straight-in approaches or either ceiling or visibility for circling approaches), the pilot must not deviate from the last ATC clearance until obtaining a new or amended clearance. The pilot may elect to:

8.13.2.1. Request clearance to a holding fix or alternate airport as applicable.

8.13.2.2. When authorized by the MAJCOM, continue the approach as published to the missed approach point and land, if the aircraft is in a position to make a safe landing and the runway environment (as defined below: 8.13.4.2.) is in sight.

8.13.2.2. (AFMC) For these circumstances, pilots may continue the approach as published to the missed approach point and may land if the aircraft is in a position to make a safe landing and the runway environment is in sight.

8.13.3. Determining DH/MDA. Pilots shall determine minimum approach altitudes (DH or MDA) with the barometric altimeter except:

8.13.3. (AFMC) For other than Category II/III Instrument Landing System approaches, radar altimeters should be set to HAT/HAA (unless flight manual procedures direct otherwise). However, primary reference for MDA/DH is the barometric altimeter.

8.13.3.1. When flying a Category II/III ILS approach, use the radar altimeter to determine Decision Height and use the barometric altimeter as a supporting instrument.

8.13.3.2. For all other approaches, MAJCOM supplements direct the use of radar altimeters.

8.13.4. Descent Below DH/MDA. The pilot will not operate an aircraft below the prescribed MDA or continue an approach below the DH unless:

8.13.4.1. The aircraft is in a position to make a normal approach to the runway of intended landing; and

8.13.4.2. The pilot clearly sees the approach threshold of the runway, approach lights, or other markings identifiable with the approach end of that runway.

8.13.5. Executing the Missed Approach. If on arrival at the missed approach point or DH (or at any time thereafter) any of the requirements in paragraph 8.13.4. above are not met, the pilot must immediately execute the appropriate missed approach procedure, ATC issued climbout instructions, or ATC clearance.

#### **8.14. Determining Visibility Minimums.**

8.14.1. Pilots must use Runway Visual Range (RVR). Prevailing Visibility (PV) may be used when RVR is not available. For circling approaches, PV shall be used.

8.14.2. Inoperative Approach Lighting. Pilots shall increase the published visibility minimums of an instrument approach by 1/2 SM or as noted in NOTAMs, on ATIS, or on the approach plate, when the runway approach lighting system (ALS) is inoperative.

#### **NOTE:**

This paragraph applies only to the ALS itself, not to VASIs, PAPIs, and other lights that are not a component of the ALS.

**8.15. IFR "VFR on Top."** MAJCOMs may authorize IFR "VFR on Top" operations if a specific mission requires such clearances.

**8.15. (AFMC)** The DFO may authorize IFR "VFR on Top" operations according to the provisions of FLIP, General Planning, if specific mission requirements dictate.

#### **8.16. Operations within the Minimum Navigation Performance Specifications (MNPS) Airspace .**

8.16.1. MAJCOMs may approve the use of navigation equipment that meets the accuracy tolerances of FAA Advisory Circular 120-33.

8.16.2. MAJCOMs will notify HQ AFFSA of the type aircraft and equipment approved.

8.16.3. Aircraft meeting the North Atlantic Track Minimum Navigation Performance Specifications (NAT MNPS) requirements meet the Canadian Minimum Navigation Performance Specifications (CMNPS) requirements.

8.16.3.1. Pilots operating aircraft in NAT airspace designated as MNPS must comply with requirements specified in FLIP AP/2, Chapter 5.

8.16.3.2. Pilots operating aircraft in CMNPS airspace must comply with the requirements specified in FLIP AP/1, Chapter 3.

8.16.3.3. HQ AFFSA must approve waivers to the requirements of NAT MNPS and/or CMNPS airspace.

8.16.4. Reduced Vertical Separation Minimums (RVSM). Pilots operating aircraft IAW RVSM criteria must comply with requirements specified in FLIP AP/2, Chapter 5.



## Chapter 9

### CREW REST AND FLIGHT DUTY LIMITATIONS

**9.1. Background Information.** This chapter explains how rest periods and maximum flying hours for aircrew members in Air Force aircraft are prescribed. It applies to all personnel who operate US Air Force aircraft.

#### **9.2. Air Force Policy.**

9.2.1. Aircrew members must receive adequate rest. The prime factors in determining adequate rest are: the total duty period, the amount of sleep before the day's activity, and the number of hours flown during the current month. The number and type of additional duties, planned free time, and adequacy of crew rest facilities are additional factors.

9.2.2. This chapter gives both the minimum and maximum restrictions allowable. MAJCOM commanders determine whether flight duty time or flying time should be restricted further or whether crew rest periods should be extended. Commanders must consider the fatiguing effects of weather, extremes of temperature, complexity of mission requirements, types of aircraft flown, impaired crew rest, circadian rhythm effect (jet lag), mission delays, and restrictive personal equipment.

9.2.3. Flight publications describe procedures for loss of pressurization, loss of oxygen, loss of cockpit temperature control, inoperative autopilot, and other inflight malfunctions or emergencies that restrict flight duration and contribute to aircrew fatigue. Such limitations in flight publications, when applicable, take precedence over less restrictive standards in this instruction.

9.2.4. Aircraft commanders must terminate a mission or mission leg if safety may be compromised by fatigue factors, regardless of authorized flight duty periods.

#### **9.3. Main Objectives.** This chapter provides:

9.3.1. Maximum allowable flight duty periods for basic and augmented crews.

9.3.2. Maximum monthly and quarterly flying hours for aircrews.

9.3.3. Minimum crew rest periods.

9.3.4. Conditions requisite to waiver requirements.

#### **9.4. Terms Explained.**

9.4.1. Aircrew or Crew. The full complement of officers and enlisted members required to operate an aircraft and to complete an assigned mission. AFI 65-503, *US Air Force Cost and Planning Factors*, lists authorized aircrew composition.

9.4.2. Aircrew Member. An individual who meets all the following:

9.4.2.1. Is an aircrew member as explained in AFD 11-4, *Aviation Service*, and AFI 11-402, *Aviation and Parachutist Service, Aeronautical Ratings and Badges*.

9.4.2.2. Is assigned to a position listed in AFI 65-503, *US Air Force Cost and Planning Factors*.

9.4.2.3. Is designated on orders to fulfill specific aeronautical tasks.

9.4.3. Augmented Aircrew. A basic aircrew supplemented by additional aircrew members to permit inflight rest periods. As a minimum, an augmented crew provides for inflight rest for crew members, if they are authorized and required for the aircraft being flown or mission being performed.

9.4.4. Basic Aircrew. Aircrew positions as explained in the technical order for the aircraft concerned and identified in AFI 65-503, Atch 36-1.

9.4.5. Crew Rest Period. The crew rest period is the non-duty period before the flight duty period begins. Its purpose is to allow the aircrew member the opportunity for adequate rest before performing in-flight duties. Crew rest is free time, which includes time for meals, transportation, and rest. Rest is defined as the condition which allows an individual the opportunity to sleep. Air Force aircrews require at least 8 hours of continuous, uninterrupted rest during the 12 hours immediately prior to the beginning of the flight duty period. If an aircrew member remains after flying to perform official duties, the crew rest period begins after termination of these duties.

9.4.5. (AFMC) Time spent traveling (e.g., as a passenger or in a POV) to or from a TDY location to perform aircrew duties does not count as crew rest.

9.4.5.1. Crew Rest Interruptions. Any official business required of an aircrew member interrupts the crew rest period. This includes official business conducted on the telephone. If crew rest is interrupted so that an individual cannot get 8 hours of uninterrupted rest, the individual must be afforded 8 more hours of uninterrupted rest, plus reasonable time to dress, eat, travel, etc. Any interruption must be made only under the most exceptional circumstances. Interruptions that are unofficial must be considered by the individual so that the intent of crew rest is met.

9.4.5.1. (AFMC) USAF TPS students will not be scheduled for events which would deny them 12 hours of crew rest. However, students may elect to use school facilities (i.e., computers, data reduction equipment and audio-visual equipment) so long as it does not interfere with the opportunity for at least 8 hours of uninterrupted rest during the 12 hours immediately prior to the beginning of the flight duty period.

9.4.5.2. Responsibilities. All USAF aircrews are subject to crew rest requirements regardless of rank or duty position. If crew rest is violated for an individual, it is the individual's responsibility to inform their supervisor and remove themselves from the flight schedule, if required.

9.4.6. Flight Duty Period. A period that starts when an aircrew reports for a mission, briefing, or other official duty and ends when engines are shut down at the end of a mission, mission leg, or a series of missions.

9.4.6. (AFMC) For deployed crews, FDP normally begins upon arrival to the aircraft unless crew briefing occurs earlier. Aircraft commanders should apply judgment to adjust FDP start time to unique situations such as lengthy travel times from billeting. The crew chief is responsible to the pilot in command when deployed. IAW AFI 21-101, the pilot in command will determine how long the crew chief can safely perform aircraft maintenance actions. As a minimum, the crew chief must have the opportunity to sleep 8 hours in each 24-hour period.

9.4.6.1. "Deadhead" Time. For crew rest purposes, "deadhead" time is computed as flight duty time. If an aircrew member will perform inflight or crew-specialty related duties (i.e., aircraft off-loading or performance data calculations) in conjunction with "deadheading", paragraphs 9.4.5., 9.9. and Table 9.1. apply.

9.4.6.2. Crew rest is required to preflight, load, start, and taxi aircraft.

9.4.7. **Sleeping Provisions.** Provisions available when crew bunks or suitable substitute rest facilities are aboard the aircraft.

**9.5. Alert Duty.** MAJCOMs establish alert and compensatory periods in keeping with mission requirements.

**9.6. Minimum Crew Rest Period.** The minimum crew rest period is 12 hours.

**9.7. Maximum Flying Time.** One hundred twenty-five hours logged flight time per 30 consecutive days and 330 hours per 90 consecutive days.

**9.8. Maximum Flight Duty Periods.** When only one pilot is aboard, the maximum flight duty period is 12 hours (see Table 9.1.).

**9.9. Scheduling Restrictions.**

9.9.1. Aircrews will not perform flight duty until the requirements of paragraph 9.6. have been met.

9.9.2. Aircrew members who have received medical care or who have engaged in activities that may reduce crew efficiency are scheduled to fly only with the concurrence of a flight surgeon.

9.9.3. Aircrew members will not fly:

9.9.3.1. Within 24 hours of compressed gas diving (including scuba); surface supplied diving, or hyperbaric (compression) chamber exposure and aircraft pressurization checks that exceed 10 minutes duration.

**Exception:** Pararescue and Combat Control personnel assigned to Air Force Special Operations Command Special Tactics Units will follow guidelines IAW US Navy Diving Manual Volumes I and II on flying and diving restrictions. Specifically, these divers should not fly for 12 hours after surfacing from a decompression dive or for 2 hours following a no decompression dive. If aircraft cabin pressure is maintained below 2,300 feet altitude, then flying may be done immediately after any breathing mixture (air, N<sub>2</sub>O<sub>2</sub>, or HeO<sub>2</sub>) dive. Flying is permitted immediately after 100 percent oxygen diving.

9.9.3.2. Within 12 hours after completion of a hypobaric (altitude) chamber flight above 25,000 feet. Personnel may fly as passengers in aircraft during this period, providing the planned mission will maintain a cabin altitude of 10,000 feet MSL or less. For altitude chamber flights to a maximum altitude of 25,000 feet or below, aircrew members may fly without delay as crew members or passengers if their cabin altitude does not exceed 15,000 feet.

9.9.3.3. Within 72 hours after donating blood. The flying unit commander must approve the donation of blood by crew members in a mobility assignment or who are subject to flying duties within this 72 hour period. Restrict all other active fliers who donate blood from flying until cleared by a flight surgeon.

9.9.3.4. Within 12 hours after consuming alcoholic beverages.

**9.10. Waiver Authority.** Procedures in this chapter may be waived by:

9.10.1. MAJCOM/DO (or ANG/XO) if the mission priority justifies the increased risk. At their discretion, waiver authority may be further delegated, but not lower than the operations group commander, or equivalent level.

9.10.1. (AFMC) AFMC/DO authorizes unit DFOs to extend the flight duty period, as outlined in this chapter, up to 2 hours. The PIC is not authorized to extend flight duty period. For all other waivers to this chapter forward the request to HQ AFMC/DOV.

**Exception:** When authorized by the MAJCOM/DO (or ANG/XO) the PIC may extend maximum flight duty period up to 2 hours provided the mission priority justifies the risk and the PIC is unable to contact the waiver authority.

9.10.2. Commander Air Force Forces (COMAFFOR) for forces “chopped” to a gaining CINC during contingencies and impending or actual hostilities.

**Table 9.1. Maximum Flight Duty Periods (Hours).**

<b>Type Aircraft</b>	<b>Basic Aircrew</b>	<b>Augmented Aircrew</b>
Fighter, Attack, or Reconnaissance (Single Control)	12	
Fighter, Attack, or Reconnaissance (Dual Control)	12	16 (Note 1)
Bomber or Reconnaissance (Single Control)	12	
Bomber, Reconnaissance, or Battle Management (Dual Control)	16	24
Transport	16 (Note 2)	
Transport (Sleeping Provisions)	16	24
Tanker	16	
Tanker (Sleeping Provisions)	16	24
Trainer	12	16 (Note 1)
Rotary Wing (without Auto Flight Control System)	12	14 (Note 1)
Rotary Wing (with Auto Flight Control System)	14	18 (Note 1)
Utility	12	18 (Note 1)

**NOTES:**

1. Applies when basic aircrew requires only one pilot and a second qualified pilot (includes pilots enrolled in a formal AFCAT 36-2223 aircrew training course) is designated an aircrew member to augment pilot duties.
2. For the purpose of this paragraph, the T-43 and the T-39 may be considered a transport.
3. (Added-AFMC) To minimize risk due to fatigue, supervisors at all levels may further restrict crew duty day for events such as flight test, practice takeoffs, emergency procedures, air refueling, low level operations, low approaches, touch-and-go landings, or night operations.

**9.11. Forms Prescribed.** AF 70, **Pilot's Flight Plan and Flight Log**; AF 72, **Air Report (AIREP)**; DD 175, **Military Flight Plan**; DD 175-1, **Military Weather Briefing**; and DD 1801, **DoD International Flight Plan**.

ROBERT H. FOGLESONG, Lt General, USAF  
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**Attachment 1****GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION*****References***

Allied Communication Publication (ACP) 160, US Supplement 1

AFCAT 36-2223 (Formerly AFR 50-5), *US Air Force Formal Schools*

AFH 11-203 (Formerly AFM 51-12), *Weather for Aircrews*

AFI 10-701 (Formerly AFR 55-44), *Performing Electronic Countermeasures in the United States and Canada*

AFI 11-204 (Formerly AFR 55-14), *Operational Procedures for Aircraft Carrying Hazardous Materials*

AFI 11-207 (Formerly AFR 55-17), *Flight Delivery of Aircraft*

AFI 11-209 (Formerly AFR 60-18), *Air Force Participation in Aerial Events*

AFI 11-214 (Formerly AFR 55-79), *Aircrew, Weapons Director, and Terminal Attack Controller Procedures for Air Operations*

AFI 11-215 (Formerly AFR 60-9), *Flight Manuals Procedures*

AFI 11-218 (Formerly AFR 60-11), *Aircraft Operation and Movement on the Ground*

AFMAN 11-230 (formerly AFI 13-209/AFR 60-27), *Instrument Procedures*

AFI 11-403, Aerospace Physiological Training Program

AFI 13-201 (Formerly AFR 55-2), *US Air Force Airspace Management*

AFI 13-203 (Formerly AFR 60-5), *Air Traffic Control*

AFI 13-207 (Formerly AFR 60-14), *Preventing/Resisting Aircraft Piracy (FOUO)*

AFI 13-208 (Formerly AFR 60-24), *Security Control of Air Traffic and Air Navigation Aids (SCATANA)*

AFI 15-114, *Weather Support Evaluation*

AFI 23-206 (Formerly AFR 67-24), *Emergency Procurement of Ground Fuels, Oil, and Other Supplies and Services at Non-DoD Locations*

AFI 24-204 (Formerly AFR 71-4), *Preparing Hazardous Materials for Military Air Shipments*

AFI 36-2212 (Formerly AFR 60-1), *Flight Management*

AFI 40-102 (Formerly AFR 30-27), *Smoking in Air Force Facilities*

AFI 44-117 (Formerly AFR 167-3), *Ophthalmic Services*

AFI 48-123 (Formerly AFR 160-43), *Medical Examination and Standards*

AFI 90-301 (Formerly AFR 120-3), *Administrative Inquiries and Investigations*

AFI 91-202 (Formerly AFR 127-3), *Hazardous Air Traffic Report (HATR) Program*

AFI 91-204 (Formerly AFR 127-4), *Investigating and Reporting US Air Force Mishaps*

AFI 91-404 (Formerly AFR 127-2), *The US Air Force Mishap Prevention Program*

AFM 55-9 *Terminal Instrument Procedures (TERPS)*

AFI 10-206 (Formerly AFR 55-55), *US Air Force Reporting Instructions*

AFMAN 10-206 (Formerly AFR 55-55), *US Air Force Reporting Instructions*

AFMAN 11-208 (Formerly AFR 55-16), *The US Military Notice to Airmen (NOTAM) System*

AFMAN 11-210 (Formerly AFP 60-19V1,3,4), *Pilot's Instrument Refresher Course (IRC) Guide*

AFMAN 11-217 (Formerly AFM 51-37), *Instrument Flight Procedures*

AFP 51-45 *Electronic Combat Principles*

AFP 64-5 *Aircrew Survival*

AFP 64-15 *Survival and Emergency Uses of the Parachute*

AFPAM 11-216 (Formerly AFM 51-40), *Air Navigation*

AFPD 11-3 (Formerly AFR 55-27), *Life Support*

AFPD 13-2 (Formerly AFR 55-48), *Air Traffic Control, Airspace, Airfield, and Range Management*

AFI 37-360, Vol 8 *The Air Force Forms Management Program*

AFR 55-34 *Reducing Flight Disturbances*

FAA Advisory Circular 20-130A *Airworthiness Approval of Navigation or Flight Management Systems Integrating Multiple Navigation Sensors*

FAA Advisory Circular 20-138 *Airworthiness Approval of Global Positioning System (GPS) Navigation Equipment for use as a VFR and IFR Supplemental Navigation System*

FAA Advisory Circular 90-45A *Approval of Area Navigation Systems for Use in the US National Air-space System*

FAA Advisory Circular 120-33 *Operational Approval of Airborne Long Range Navigation Systems for Flight within the NAT-MNPS Airspace*

FAA Handbook 7110.65 *Air Traffic Control*

FAA Handbook 7400.2 *Procedures for Handling Airspace Matters*

FAA Handbook 7610.4 *Special Military Operations*

FAA Handbook 8260.19 *Flight Procedures and Airspace*

FAR Part 91 *General Operating and Flight Rules*

FAA TSO-129a *Airborne Supplemental Navigation Equipment Using the Global Positioning System (GPS)*

T.O.-00-20-1 *Preventive Maintenance Program, General Policy Requirements and Procedures*

T.O.-00-20-5 *Aircraft, Drone, Aircrew Training Devices, Engines, and Air-Launched Missile Inspections, Flight Reports, and Supporting Documents*

T.O.-00-25-172 *Ground Servicing of Aircraft and Static Grounding/Bonding (ATOS)*

T.O.-1-IB40 *Weight and Balance Data*

T.O.-1-IB-50 *Basic T.O. for USAF Aircraft Weight and Balance*

T.O. 1-1-300 *Acceptance/Functional Check Flight and Maintenance Operational Checks*

T.O. 42C-1-2 *Anti-Icing, De-Icing and Defrosting of Parked Aircraft*

### ***Abbreviations and Acronyms***

**ADIZ**—Air Defense Identification Zone

**AFFSA**—Air Force Flight Standards Agency

**AFRC**—Air Force Reserve Command

**AGL**—Above Ground Level

**AIREP**—Air Report

**ANG**—Air National Guard

**AOE**—Airport Of Entry

**ARA**—Airborne Radar Approach

**ARCP**—Air Refueling Control Point

**ARTCC**—Air Route Traffic Control Center

**ASRR**—The Airfield Suitability and Restrictions Report

**ATC**—Air Traffic Control

**ATIS**—Automatic Terminal Information Service

**CMNPS**—Canadian Minimum Navigation Performance Standards

**CONUS**—Continental United States

**DH**—Decision Height

**ETA**—Estimated Time of Arrival

**FAA**—Federal Aviation Administration

**FAR**—Federal Aviation Regulation

**FCG**—USAF Foreign Clearance Guide

**FL**—Flight Level

**FLIP**—Flight Information Publication

**FOD**—Foreign Object Damage

**FSS**—Flight Service Station

**ft.**—Feet

**GPS**—Global Positioning System

**HDD**—Head-Down Display

**HUD**—Head-Up Display



**ICAO**—International Civil Aviation Organization  
**IFR**—Instrument Flight Rules  
**ILS**—Instrument Landing System  
**IMC**—Instrument Meteorological Conditions  
**KIAS**—Knots Indicated Airspeed  
**LRA**—Landing Rights Airport  
**MAJCOM**—Major Command  
**MDA**—Minimum Descent Altitude  
**MDS**—Mission Design Series  
**MEA**—Minimum En route Altitude  
**MNPS**—Minimum Navigation Performance Specifications  
**MOA**—Military Operations Area  
**MOCA**—Minimum Obstruction Clearance Altitude  
**MSL**—Mean Sea Level  
**MTR**—Military Training Route  
**NAT**—North Atlantic Track  
**NAVAID**—Navigational Aid  
**NM**—Nautical Mile  
**NOAA**—National Oceanic and Atmospheric Administration  
**NOTAM**—Notices to Airmen  
**NVG**—Night Vision Goggle  
**OROCA**—Off Route Obstruction Clearance Altitude  
**ORTCA**—Off Route Terrain Clearance Altitude  
**PIREP**—Pilot Report  
**PGU**—Portable GPS Unit  
**PMSV**—Pilot-to-Metro Service  
**PV**—Prevailing Visibility  
**RA**—Radar Altitude  
**RNAV**—Area Navigation  
**RSU**—Runway Supervisory Unit  
**RVR**—Runway Visual Range  
**RVSM**—Reduced Vertical Separation Minimum

**RVV**—Runway Visibility Value

**SARP**—Standards and Recommended Practices

**SFO**—Simulated Flameout

**SM**—Statute Mile

**SUA**—Special Use Airspace

**TEMPO**—Temporary

**TERPS**—Terminal Instrument Procedures

**T.O.**—Technical Order

**TSO**—Technical Standard Order

**VFR**—Visual Flight Rules

**VMC**—Visual Meteorological Conditions

**WX**—Weather

### *Terms*

**Aerobatics**—Intentionally performed spins, vertical recoveries, and other maneuvers that require pitch and bank angles greater than 90 degrees.

**Air Combat Tactics**—A general term which includes basic fighter maneuvers, air combat maneuvers, and air combat tactics.

**Civil Twilight**—The period that ends in the evening when the center of the sun's disk is 6 degrees below the horizon and begins in the morning when the center of the sun's disk is 6 degrees below the horizon.

**Diverse Departure**—The airfield has been assessed for departure by TERPS personnel and no penetration of the obstacle surfaces exists. An aircraft may depart the field, climb to 400 feet above the departure end of the runway elevation, turn in any direction, and if a minimum climb gradient of 200'/NM is maintained be assured of obstacle clearance. This is normally indicated on DoD/NOAA publications by the absence of any published departure procedures.

**FAA Authorization**—An authorization is an official written FAA document which provides the grantee relief from specified parts of the Federal Aviation Regulations (FARs).

**FAA Exemption**—An exemption is an official written FAA document which provides the grantee relief from specified parts of the Federal Aviation Regulations (FARs).

**Formation**—Operating under any of the following conditions:

- a. When the flight leader has requested and ATC has approved other than standard formation dimensions.
- b. When operating within an authorized altitude reservation (ALTRV) or under the provisions of a letter of agreement.
- c. When the operations are conducted in airspace specifically designed for a special activity.

**Formation Flight**—More than one aircraft which, by prior arrangement between the pilots, operates as a single aircraft with regard to navigation and position reporting. Separation between aircraft within the

formation is the responsibility of the flight leader and the pilots of the other aircraft in the flight. This includes transition periods when aircraft within the formation are maneuvering to attain separation from each other to effect individual control and during joinup and breakaway. Such a group is treated for ATC purposes as a single aircraft.

**Fuel Reserve**—The amount of usable fuel that must be carried on each aircraft, beyond that required to complete the flight as planned.

**GPS “Overlay” Approaches**—These are instrument approaches that have been approved for use with GPS based on an existing traditional instrument approach such as a VOR or NDB approach.

**Instrument Meteorological Conditions**—Meteorological conditions expressed in terms of visibility, distance from cloud, and ceiling less than the minima specified for visual meteorological conditions.

**Minimum Fuel**—Indicates that an aircraft’s fuel supply has reached a state where, upon reaching the destination, it can accept little or no delay. This is not an emergency situation but merely indicates an emergency situation is possible should any undue delay occur.

**Night**—The time between the end of evening civil twilight and the beginning of morning civil twilight, as published in the American Air Almanac, converted to local time.

**OROCA**—An off-route altitude which provides obstruction clearance with a 1,000 foot buffer in nonmountainous terrain areas and a 2,000 foot buffer in designated mountainous areas within the United States. This altitude may not provide signal coverage from ground-based navigational aids, air traffic control radar, or communications coverage.

**ORTCA**—An off-route altitude which provides terrain clearance with a 3,000 foot buffer from terrain. This altitude may not provide signal coverage from ground-based navigational aids, air traffic control radar, or communications coverage. This altitude is used on en route charts covering those areas outside the United States.

**P Airfield**—Civil airport wherein permit covers use by transient military aircraft.

**Standard Formation**—One in which a proximity of no more than 1 NM horizontally and within 100 feet vertically from the flight leader is maintained by each wingman.

**Stopover Flight**—A flight where intermediate stops are planned en route to a final destination.

**Unmonitored Navigational Aid**—A NAVAID must be monitored for maintenance purposes by a staffed ATC facility or other agency for it to be considered operational. Unmonitored NAVAIDS listed in the IFR supplement may not be operational and/or may provide unreliable navigational information.

**Visual Meteorological Conditions (VMC)**—Meteorological conditions expressed in terms of visibility, distance from cloud, and ceiling equal to or better than specified minima.

**Attachment 2****IC 2001-1 TO AFI 11-202, VOLUME 3, GENERAL FLIGHT RULES****9 FEBRUARY 2001*****SUMMARY OF REVISIONS***

This interim change (IC) 2001-1 provides new guidance for flying under Visual Flight Rules (VFR), during night operations, bird hazard advisories and new Engine-out departure procedures. The text of this interim change replaces and adds to the current guidance. This IC also realigns material previously contained in unnumbered, bulleted paragraphs, to reflect the current paragraph numbering scheme. Changed, revised or added material is indicated by a “[”

**2.1. Preflight Planning.**

2.1.1. The PIC will ensure that aircrew members know the appropriate procedures and have applicable information available to them for the intended operation. These shall include, but are not limited to:

2.1.1.1. Appropriate sections of the aircraft technical order (T.O)

2.1.1.2. NOTAMs.

2.1.1.3. FLIP.

2.1.1.4. Alternatives available if the flight cannot be completed as planned.

2.1.1.5. Departure, en route, destination, and alternate weather observations and forecasts.

2.1.1.6. Fuel requirements.

2.1.1.7. Minimum safe altitudes for the planned route and terminal area.

2.1.1.8. Takeoff and landing limitations.

2.1.1.9. The Airfield Suitability and Restrictions Report (ASSR).

2.1.1.10. AFI 11-2MDS-Specific, Volume 3 Operations Procedures.

2.1.1.11. (Added) Applicable bird advisories and hazard information, available through internet sources, ATIS, or as disseminated locally.

2.1.2. The Airfield Suitability and Restrictions Report (ASSR). Each MAJCOM will:

2.1.2.1. Establish specific policy on the applicability by MDS and how aircrews will use the ASSR.

2.1.2.2. Ensure the ASSR is available to aircrews, mission planners, and other personnel as required.

2.1.2.3. Establish procedures to ensure personnel are properly trained on how to access and use the ASSR.

2.1.3. Publications. The PIC will ensure that the current copies of the appropriate FLIP en route supplement, en route charts, Flight Information Handbook, and appropriate arrival, approach and departure procedures are aboard the aircraft. If an electronic navigation system database is used, the PIC will ensure it is current.

2.1.4. Stopover flights. The PIC will:

2.1.4.1. Ensure the entire flight is planned to its final destination in the greatest detail possible for each leg of the flight.

2.1.4.2. Before departing each intermediate stop, obtain the latest weather and NOTAM information available for the intended route, destination and alternate.

4.3.5. (Added) VFR Flights. Commanders will ensure all VFR flight operations are only conducted out of necessity, as dictated by mission or training requirements.

**5.28. (Added) Night Approaches.** MAJCOMs shall determine procedures governing the use of instrument approaches while operating in night VMC conditions.

7.1.1.1. (Added) PICs will request and utilize VFR Radar Advisory Services (Flight Following) to the maximum extent practical.

8.7.2.5. (Added) Engine-Out Departure Procedures. USAF aircrews now have published engine-out departure procedures for selected airfields and aircraft. These Jeppesen Ops-Data designed and published IFR procedures are applicable after the loss of an engine and, where available, shall be used for engine-out departure planning. To ensure procedures are updated and current, applicable procedures shall be retrieved prior to each mission from the official Jeppesen Departure Procedure web site. MAJCOMs will ensure aircrews receive appropriate training on these procedures prior to their authorized use within applicable MDS aircrews.